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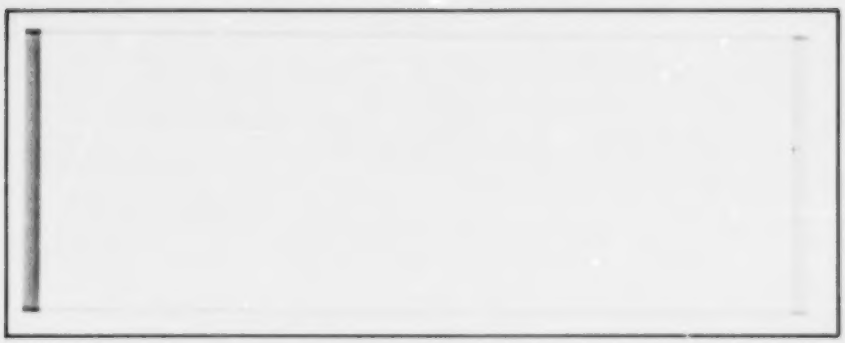

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STRUCTURAL CHANGE IN THE LIVESTOCK SECTOR

(Working Paper 4/88)

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April 1988

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ACKNOWLEDGMENTS

I would like to thank all who provided help during the preparation of this paper. I am particularly grateful for the assistance and suggestions provided by Larry Young and Ray Bollman, and for the helpful comments provided by the Al Boswell and Jane Owen of the Red Meat Unit. I would also like to thank others who took of their time to review the paper.

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STRUCTURAL CHANGE IN THE LIVESTOCK SECTOR

1.0 Introduction

Given the economic environment since 1981 there may reason to believe major changes have taken place in agriculture. The sharp rise in real interest rates in the early eighties, fluctuating commodity prices and decreased land values are some factors which have created severe financial hardship for some in the agriculture industry. Especially hard hit were new entrants, those wishing to expand and those sectors that may be defined as capital intensive which includes those who borrowed to expand before 1981. Many farms have not yet recovered from the large debt obligations accumulated while interest rates were high because livestock prices were low. This economic environment could have affected the structure of the industry in several ways. Farmers may exit the industry resulting in fewer farms and a change in structure. Expansion may be limited resulting in a slower rate of increase in average farm size than in previously observed, thus, sustaining the prevailing structure. Changes in specialization may have occurred through either increased specialization to capture gains from focusing management or more diversification to reduce risk.

Structural change represents changes in the number, size, concentration, type, ownership, tenure, specialization,

financial structure, market integration, barriers to entry, ideological conformity and socioeconomic characteristics (Brinkman and Warley, 1983). Structural change, as it relates to changes in these attributes are the industry's response to changing markets, technology and policy.

Structural change in agriculture has been well documented in recent years. Brinkman and Warley conducted an in-depth study of structural change in agriculture using the 1981 Census of Agriculture and previous census data. The livestock sector, specifically, was studied in depth by Bollman and Ehrensaft, for the cattle industry, and Shumsky, for the hog industry, also using the 1981 census. It is not intended to repeat much of what has been done previously but, rather, to update the more in-depth studies with data from the 1986 Census to determine if there have been major changes in the past 10 years and, particularly, since 1981.

These studies all observed similar changes in structural attributes of the sectors under study. Farm numbers declined and farm size increased for agriculture as a whole and for the cattle and hogs sectors. Concentration in the agriculture industry and the livestock sector, also increased, with the exception of the cow-calf subsector. Specialization increased as farms moved away from mixed farming operations and toward production of one type of

product; much more of the production of each commodity is now accounted for by specialized farms. Business organization changed as partnerships and family corporations increased and tenure changed as rented acreage increased. Increased levels of debts to assets were observed.

This paper will focus on changes in the structural attributes of the industry, and on the changing markets, technology and policies which influence theses changes. Specifically, the paper will document changes in the number of farms, livestock inventories, farm size, concentration of production and on the level of specialization for cattle, hogs and sheep. Further, each sector will be disaggregated by enterprise and farm type to determine changes in specialization. The cost structure, financial structure, and policies within each sector will be examined to identify possible underlying reasons for change. Regional differences will be noted where possible or where important.

It is important to point out that this analysis does not represent structural change in the commercial sector. It has encompassed the broad base of producers that have livestock on farms which includes commercial operations plus many small and part-time farms. Consequently, these changes may or may not represent changes in the commercial sector of livestock production.

2.0 The Hog Sector

2.1 Size and Number

The June 3, 1986 Census reports 36,472 farms reporting a total inventory of 9,756,569 pigs. This represents an average farm size of 267 pigs; an increase of 50% since 1981. At the time of the 1976 Census western Canada had more farms reporting pigs than eastern Canada (Figure 1). Since that time the numbers of farms reporting pigs have fallen in both regions but western Canada now has fewer hog farms than eastern Canada. There has been a significant drop in the number of farms since 1981; at least half of the small farms are gone and decreases are reported in all categories of herds with less than 750 pigs. The largest declines are in the smaller farm sizes, that is, those reporting herd sizes of less than 100 pigs.

Contrary to the drop in farm numbers the numbers of pigs on farms with pigs has increased significantly since 1976 (Figure 2). Twice as many pigs are now produced on half as many farms. Eastern Canada has at least twice the number of hogs as western Canada but, whereas pig numbers declined from 1981 to 1986 in the east, there is a slight increase in pig numbers over that period in the west. This increase in

Figure 1 NUMBER OF FARMS WITH PIGS

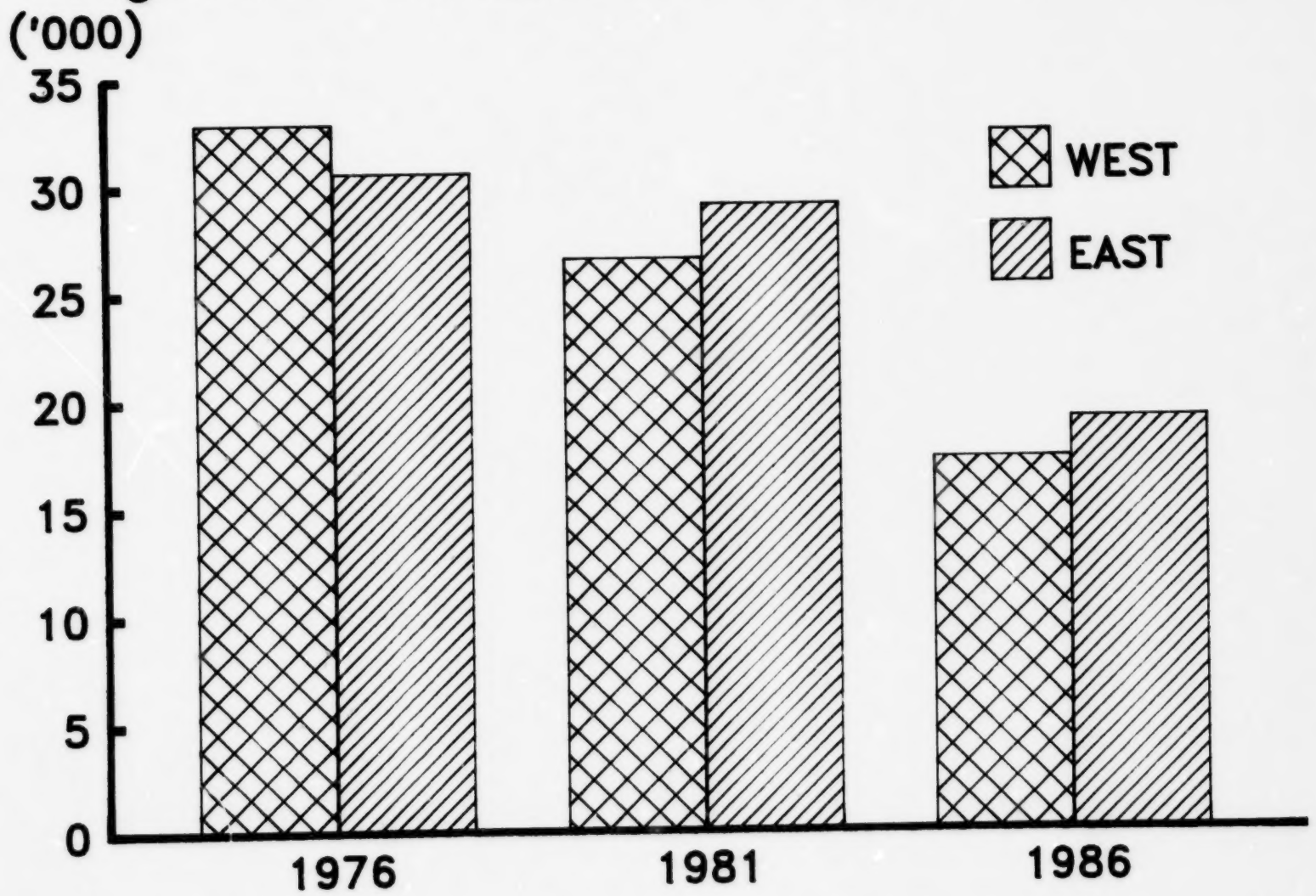
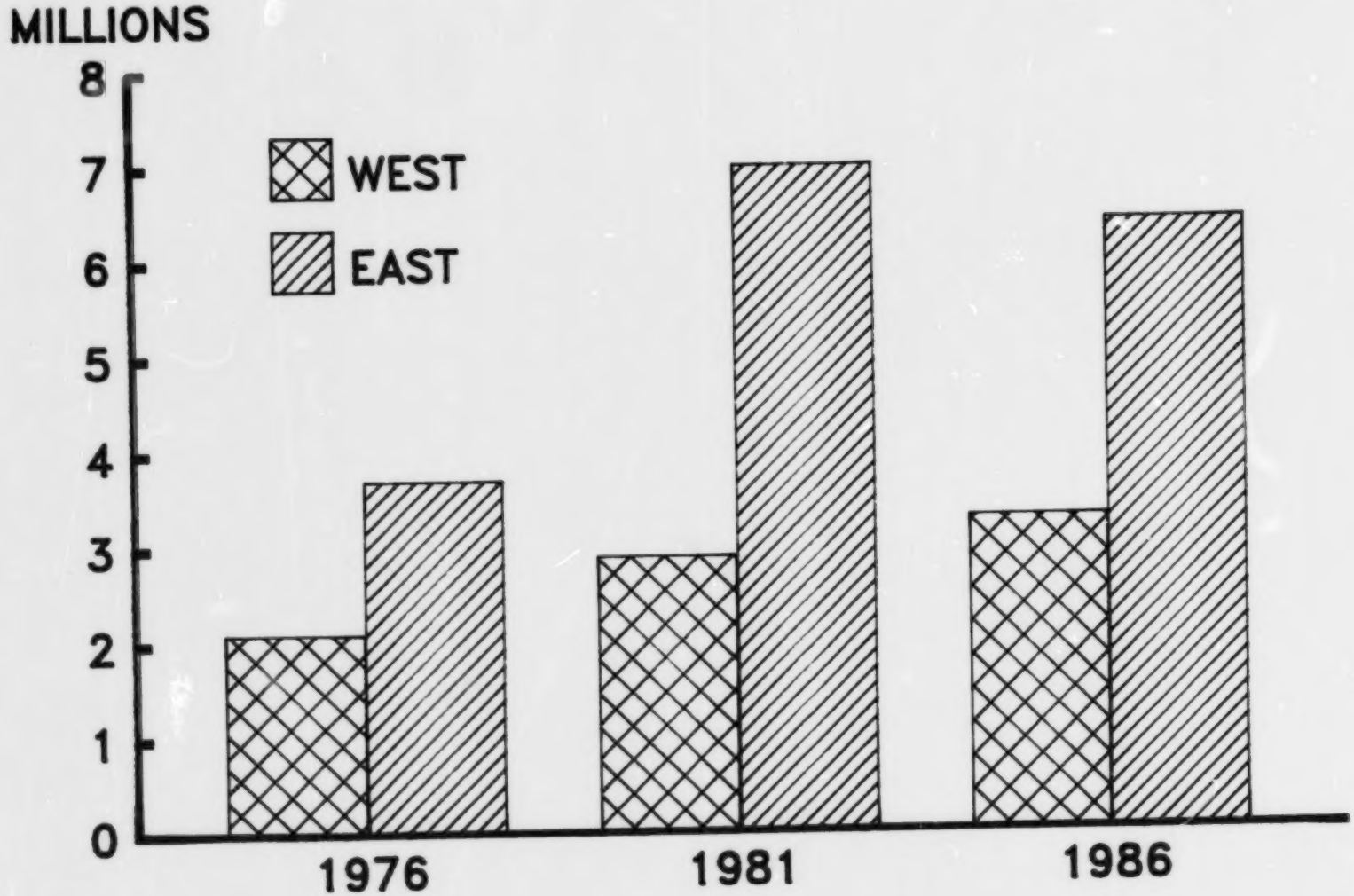


Figure 2 NUMBER OF PIGS ON FARMS



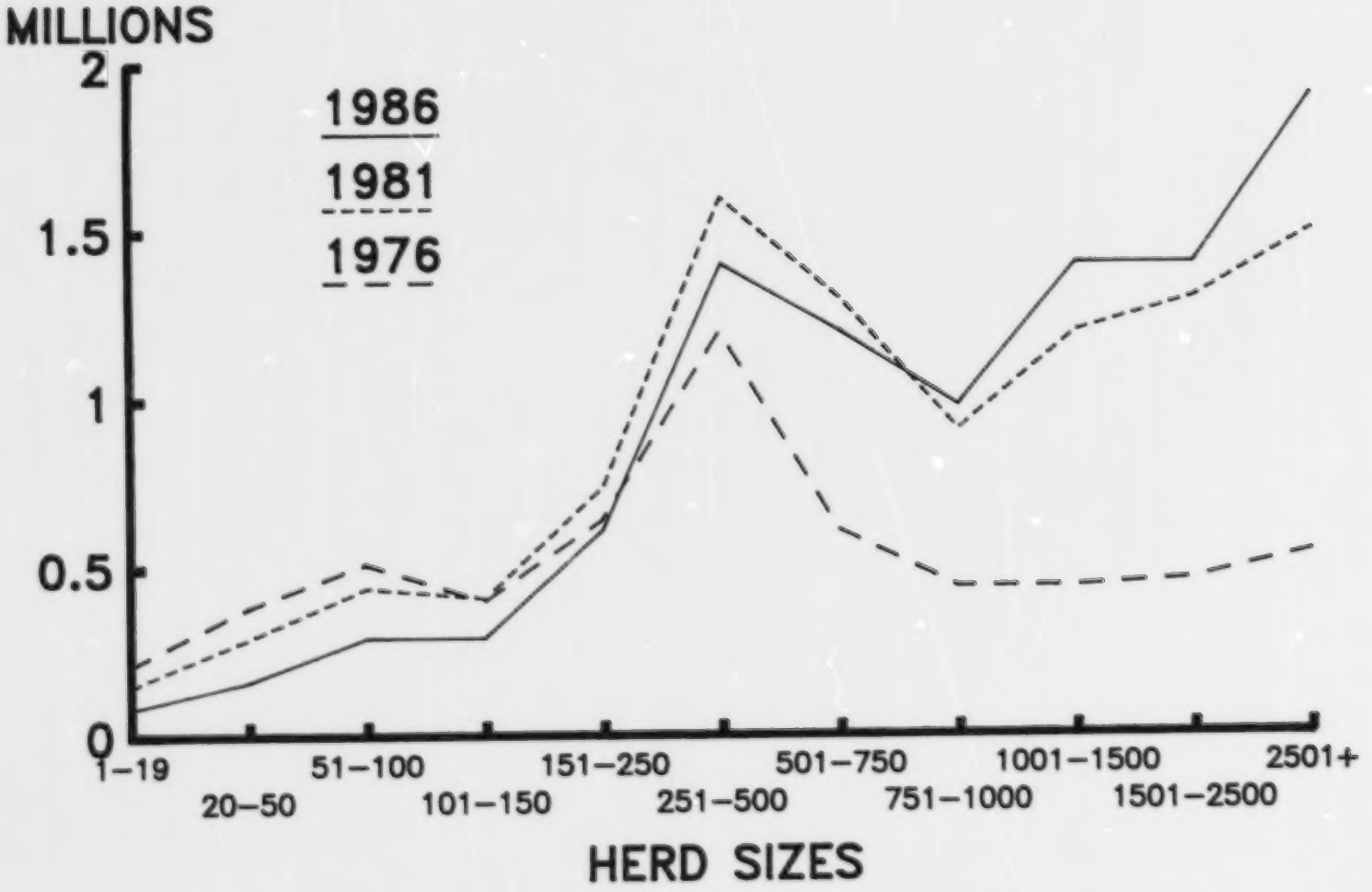
western Canada in 1986 may be a result of lower relative prices of feedgrains and programs such as the Alberta Crow Offset Program. As well, western Canada has a large number of Hutterite farms that tend to maintain production regardless of economic conditions.

The distribution of production by size shows that operations with 2500 or more pigs account for the largest single category of all the herd sizes (Figure 3). This size category has doubled since 1976 and now accounts for about 20% of the inventory. Operations of between 250 and 500 pigs have a high but declining proportion of the inventory - 15% in 1986 compared with 20% in 1976. Production, then, is shifting to farms with large herd sizes. This continues the trend to increasing size.

2.2 Concentration

Changes in concentration of the industry are concerned with the size and distribution of production and can be illustrated using Lorenz curves. These curves measure relative concentration and equality of production among a given number of firms. They are calculated by dividing the number of farms and the number of pigs into differing herd sizes; then the percentage of farms and the percentage of pigs in each category is calculated. The cumulative

Figure 3 DISTRIBUTION OF PIGS ON FARMS CANADA



percentage of pigs and farms are plotted against each other with pigs or the vertical axis and farms on the horizontal axis. If all farms had the same sized herd, the Lorenz curve would be a linear diagonal line across the graph. As the distribution of production becomes more unequal, for example many small farms accounting for a small percentage of production plus a few large farms producing the majority of pigs, the Lorenz curve shifts down and to the right, away from the diagonal line (Figure 4). The Lorenz curves for each census period show, from the shape and distance from the diagonal line, that in all years the industry is quite concentrated but it is also apparent that 1986 is less so than the previous two census years. Therefore, in aggregate, the industry is slightly less concentrated than it was in 1976 or in 1981. Further investigation revealed that changes in concentration occurred only in Quebec where changes were dramatic (Figure 5, 6 & 7).

There are some possible reasons for the decrease in Quebec which is contrary to the rest of Canada. First, dairy quota had not been a limiting factor in production until 1975; in that year quotas were reduced. In effect production was constrained by the quota. At the same time the Quebec government was encouraging, through loan guarantees and reduced interest rates, entry into other livestock industries. As other agricultural opportunities were

Figure 4 CONCENTRATION OF THE HOG SECTOR

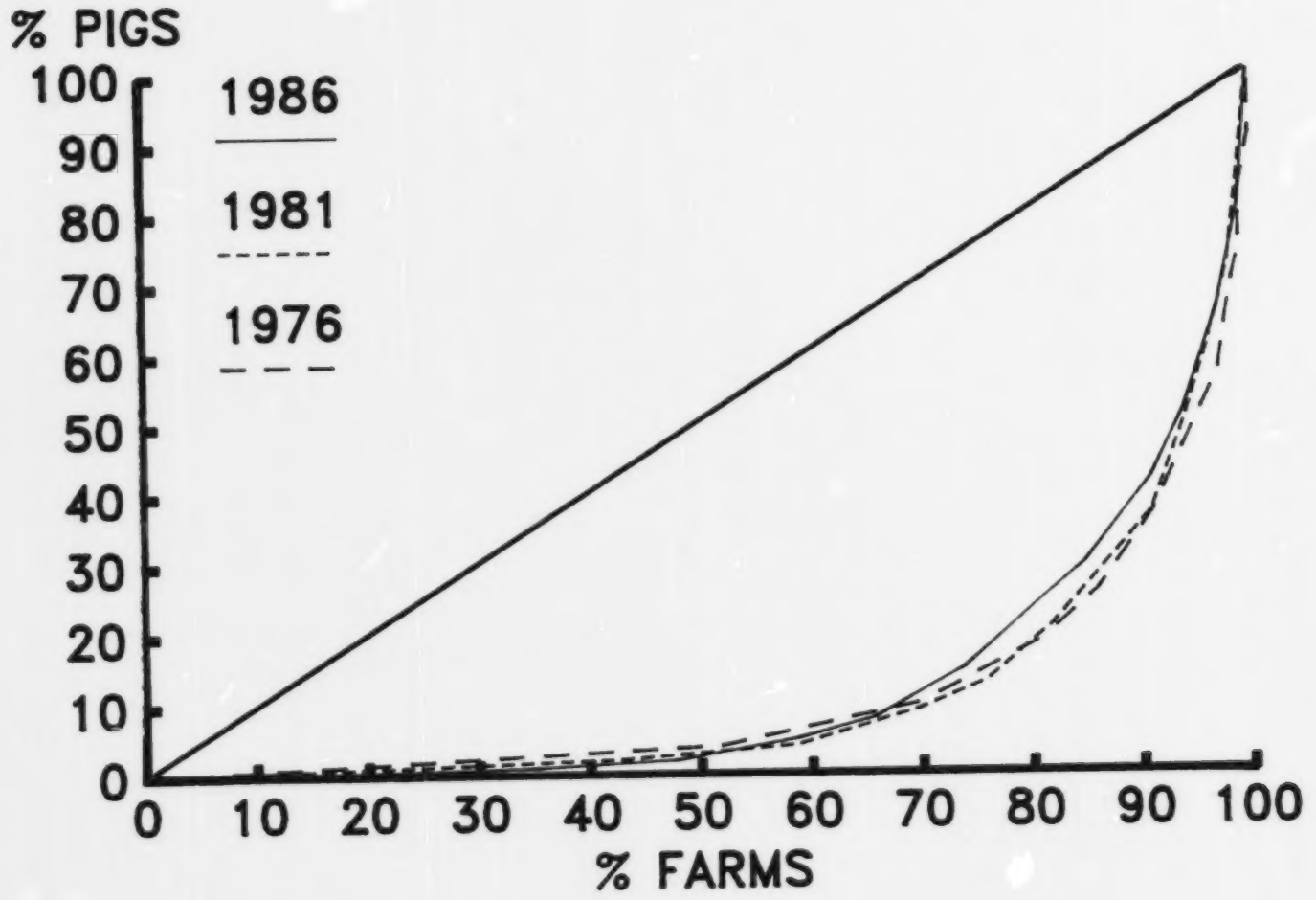


Figure 5 CONCENTRATION OF THE HOG SECTOR WESTERN CANADA

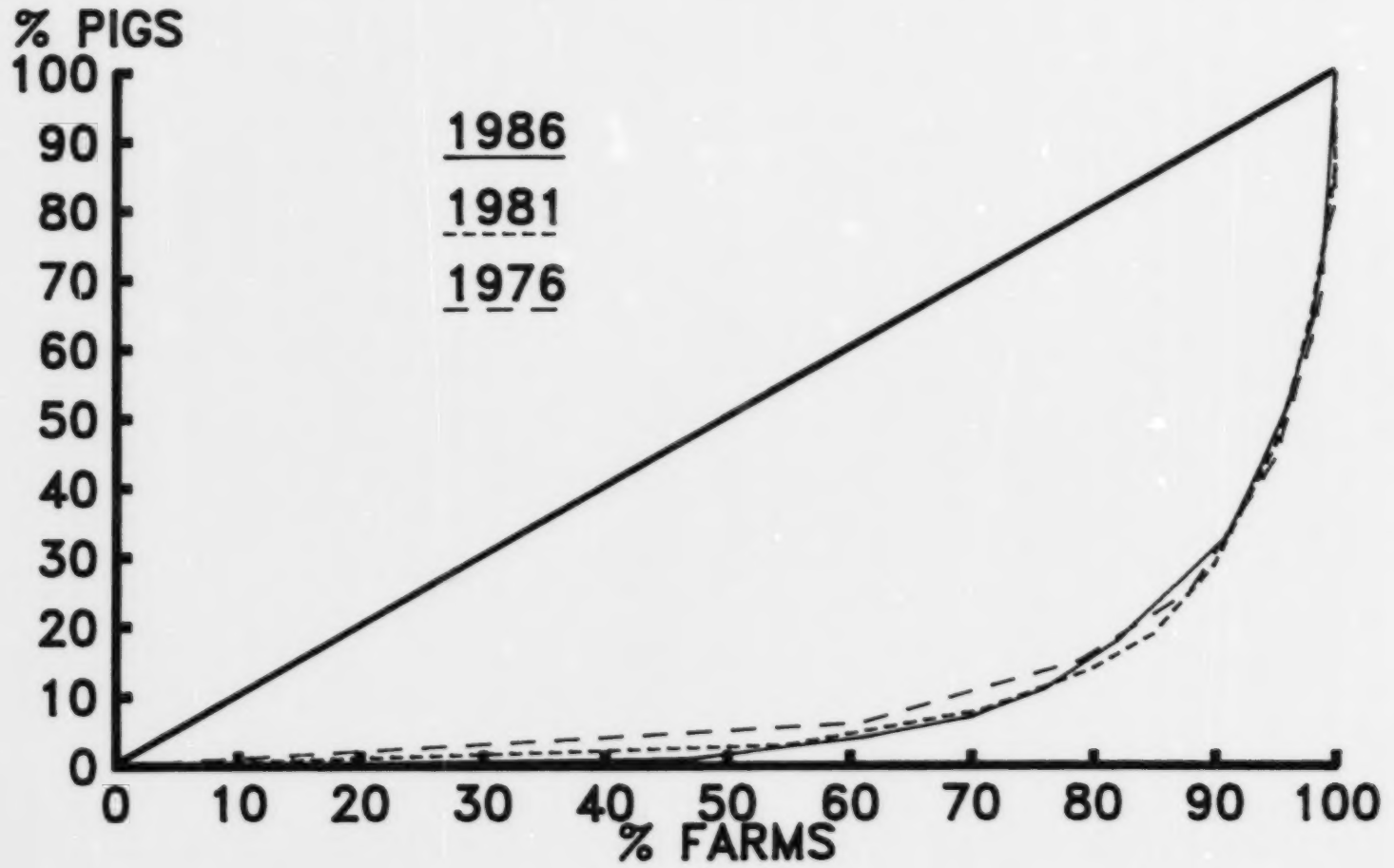


Figure 6 CONCENTRATION OF THE HOG SECTOR EASTERN CANADA

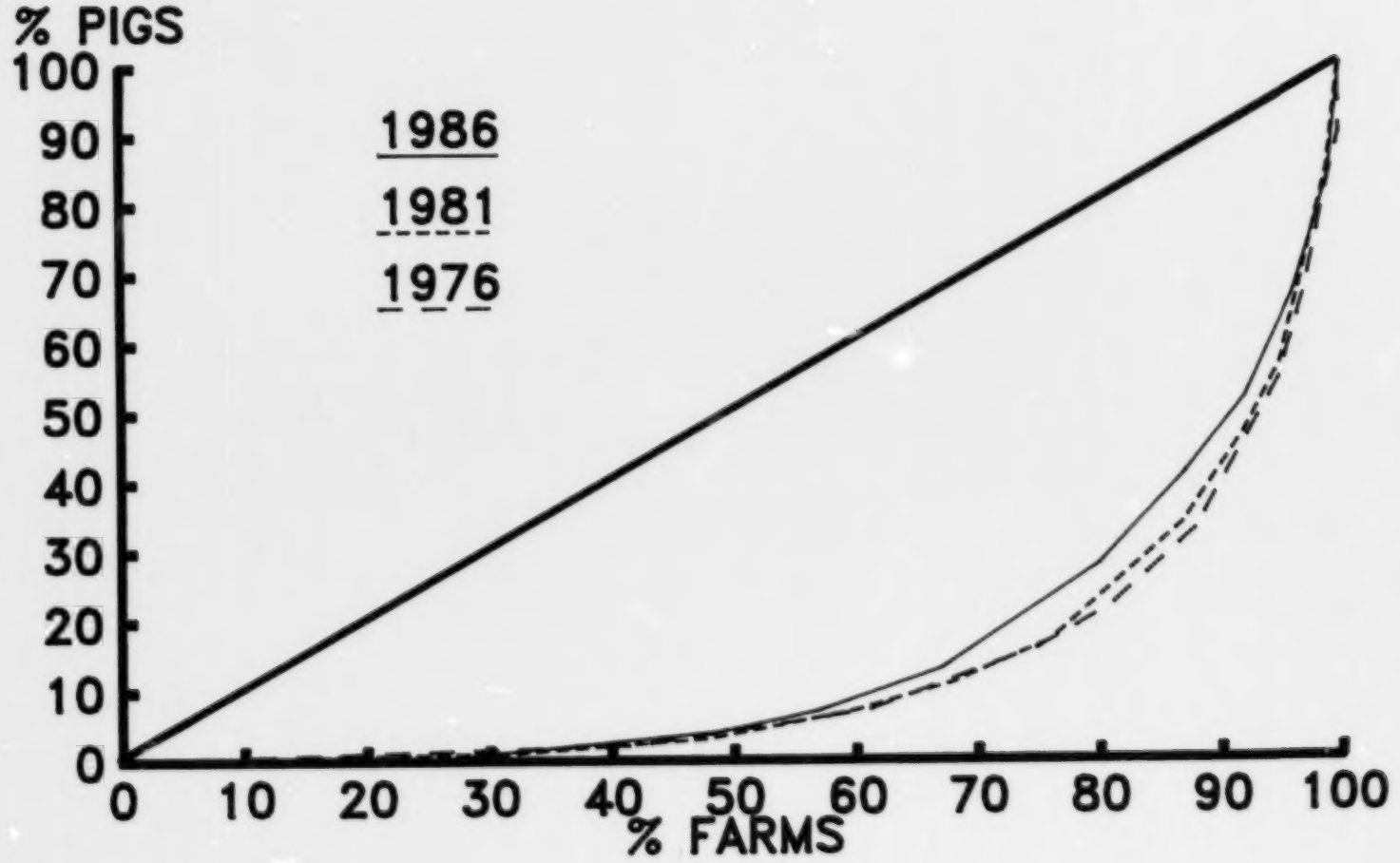
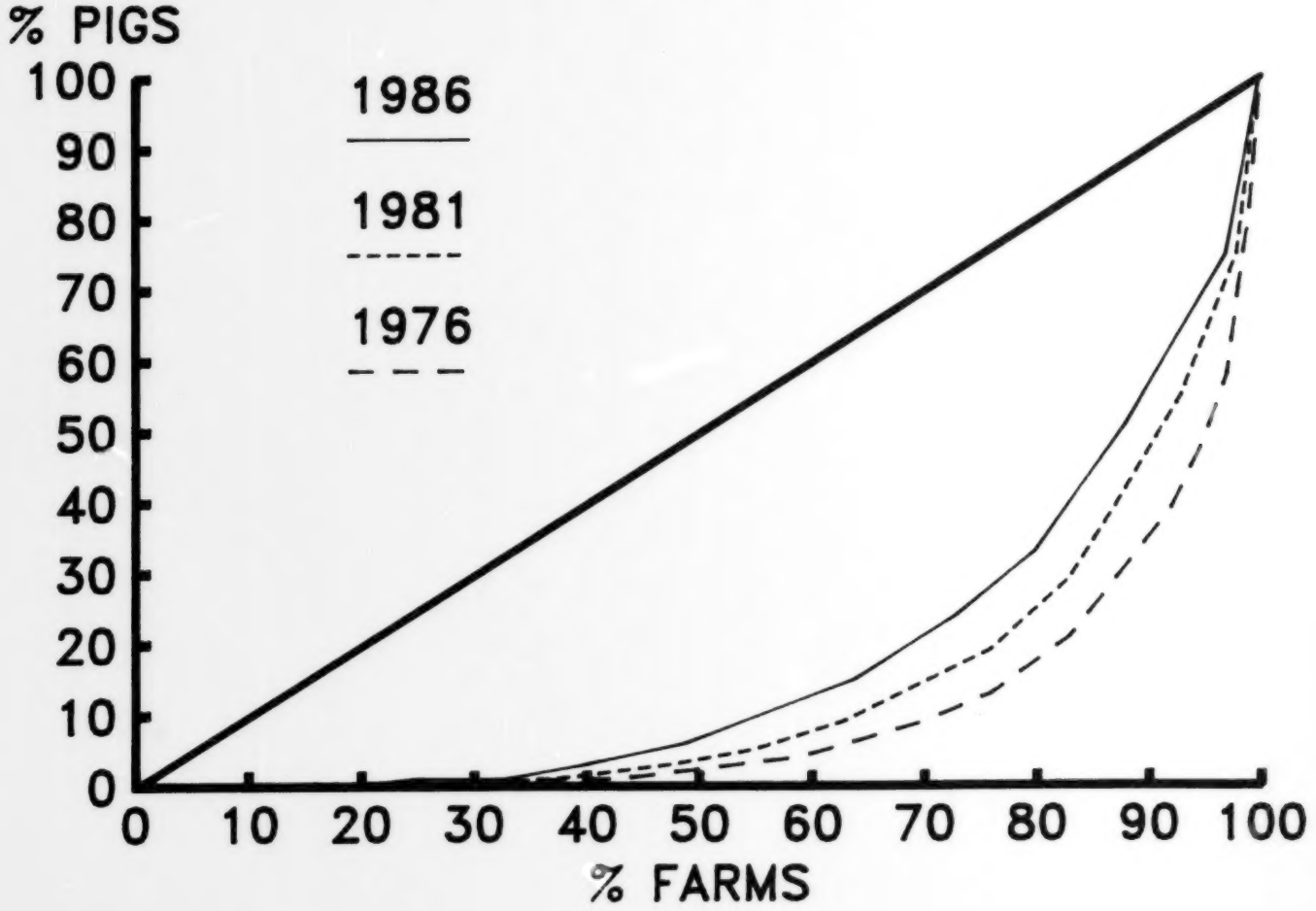


Figure 7 CONCENTRATION OF THE HOG SECTOR QUEBEC



limited, i.e. a limited land base for cattle and supply management in the poultry sector, the hog industry was a logical alternative for those wishing to exit the dairy industry but remain in agriculture utilizing land, buildings and labor. It was also a logical alternative for new entrants into agriculture. These entrants shifted the Lorenz curve back by producing more pigs in medium or smaller sized herds.

The shift back in 1986 was for a different reason. Prior to 1981 Quebec had many large integrated firms in the hog sector. Stabilization programs were introduced in the early 1980's which limited the herd size eligible for payments. This served to encourage large firms to reorganize into smaller units to capture the benefits of these payments. Some of these large firms did disband or reorganize into smaller units and now, more of the production is in the hands of smaller independent producers. This, combined with large scale exits of very small farms made the distribution of production more equal. This shift to more production and more farms in smaller sized categories caused a shift upward in the Lorenz curve over time.

2.3 Specialization

Census farms reporting hogs were first broken down into small

farms (less than 20 pigs) and larger operations which were then divided into farrowing enterprises, farrow to finish enterprises and finishing enterprises. Although there were a significant number of small farms, the total pigs on those farms were small so they have not been given the same emphasis in this analysis. Farrow to finish operations have accounted for the largest number of farms since 1976 and as a percentage of total farms have increased each census period (Figure 8). From 1976 to 1981 there was an increase in the proportion of farrowing operations and a decrease in the number of finishing operations. This trend reversed from 1981 to 1986 and now farrowing enterprises and finishing enterprises account for approximately 17 percent, each, of the farms. Farrow to finish operations account for approximately 30% of the total which implies that a large percentage of the farms reporting pigs have less than 20 pigs.

Examination of the percentage of pigs on each of these enterprises show that since 1976 pigs on farrow to finish operations have steadily increased to account for about 65% of production (Figure 9). Pigs on farrowing operations rose slightly from 1976 to 1981 and then fell to a little over 10%. Pigs on finishing operations have consistently declined to just over 20%. Farrow to finish operations have increased both in terms of the percent of total farms and percent of

Figure 8 PERCENT OF FARMS BY ENTERPRISE TYPE CANADA

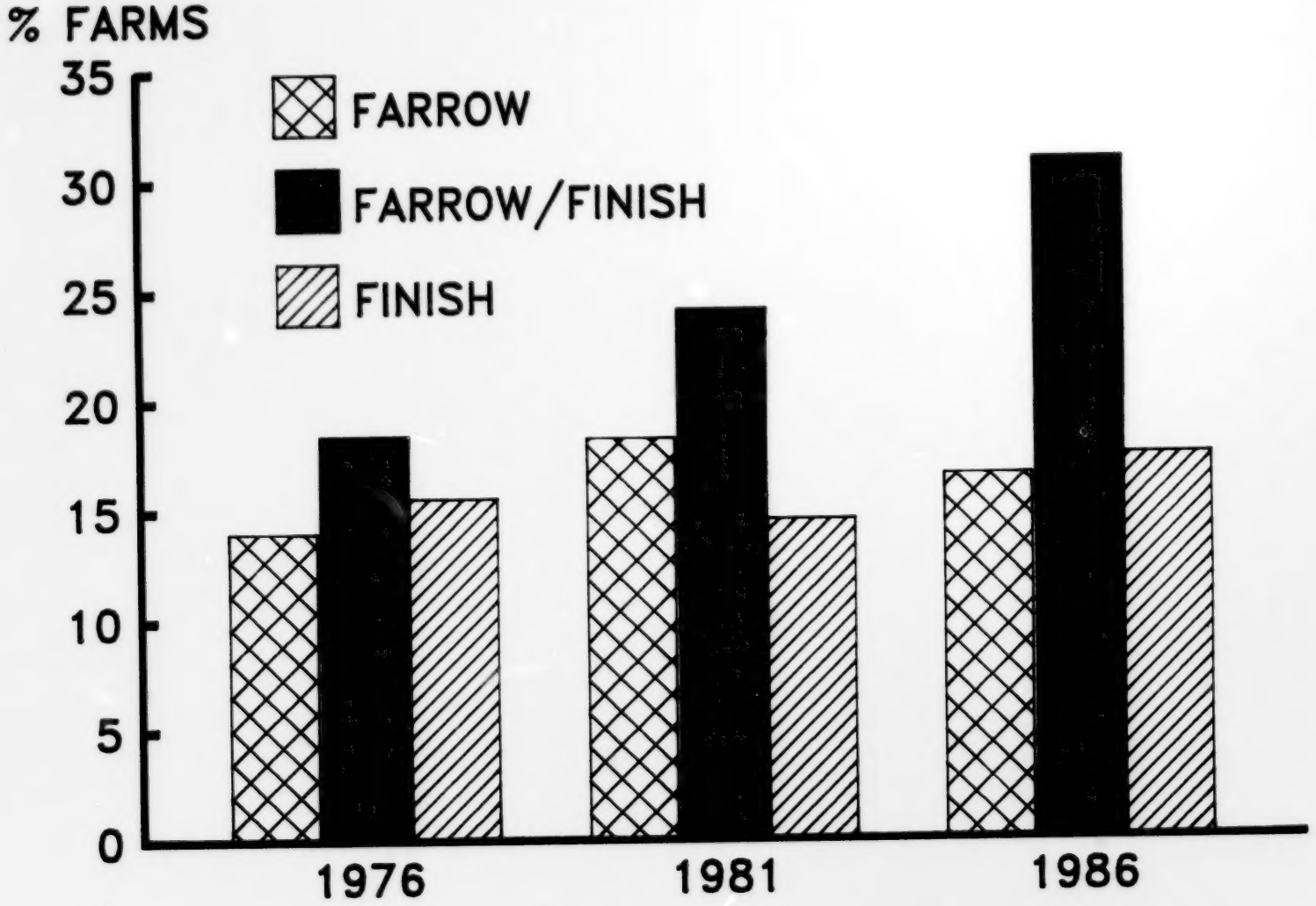
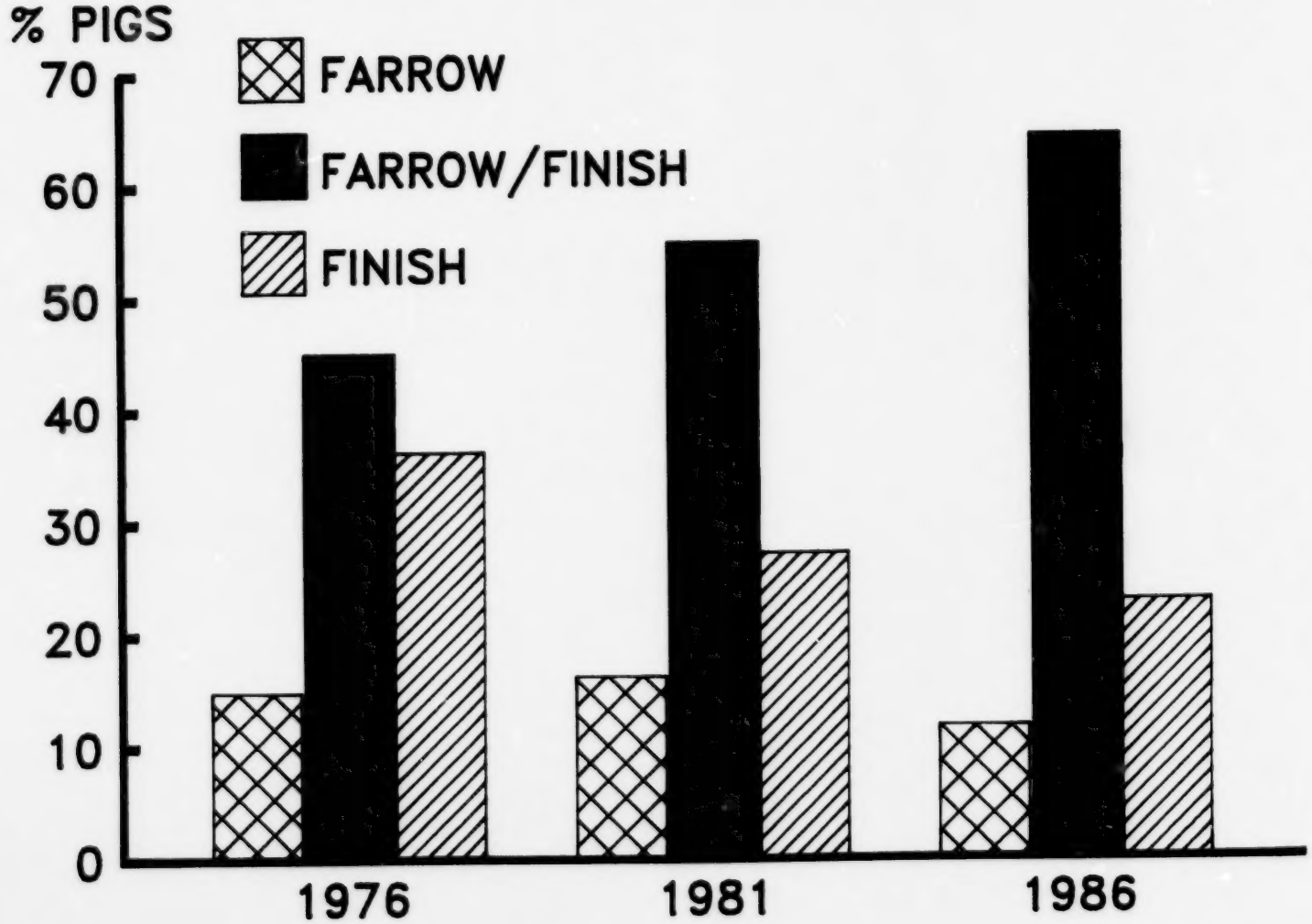


Figure 9 PERCENT OF PIGS BY ENTERPRISE TYPE CANADA



total production and clearly dominate the hog sector in Canada.

There are several reasons for this. Confinement rearing requires the avoidance of productivity losses associated with stress during transport and from transmissible disease. Keeping hogs from birth to market decreases the risks of mixing and moving stock. There is modest additional labor required to finish hogs; 75 to 90% of labor hours invested in a finished hog is incurred in getting the animal to the weanling stage. The proportion of capital required is less but greater than 2/3 of finished hog market returns can be captured with the final portion of labor (Rice, 1987). Lack of an organized grading system for weaner pigs means the specialized farrowing producers are less able to obtain price premiums to recoup investment in genetic improvements. The exception is the larger specialized sales companies with a reputation for sound breeding (Rice, 1987).

One measure of specialization is the proportion of livestock produced by farms specializing in one type of livestock. Farm type is determined by calculating the commodity or commodity group contributing to the majority of sales of the farm. For example, a farm is said to be a hog farm if more than 50% of its sales come from the sale of hogs. Over eighty percent of hog production comes from specialized hog

farms so specialization has increased since 1976 (Figure 10). This is an important structural change and one that is observed in other sectors as the move away from mixed farming and into specialized production continues.

2.4 Economies of Size

If economies of size are present an economic incentive for farm size to increase will exist as long as long run costs are decreasing. One way to determine if economies of size are present is to examine the underlying cost structure of each enterprise. Ratios of cost to revenue, by size of farm, can be calculated, from the 1986 Census, to determine if there is financial incentive to move to larger farms. Cost curves were generated for each of the enterprise types using census expenses and revenues as proxies for long run average operating costs and average revenue. It is not possible to calculate average total cost from census data because of the absence of data on fixed cost.

In all cases the ratio of cost to average revenues drops as farm size increases (Figure 11 to 13). Economies are captured quickly and there is not much change after that point, as size increases. Therefore, there is no strong motive to expand to lower costs. The profit per unit of output does remain positive as farm size increases and so

Figure 10
SPECIALIZATION OF HOG PRODUCTION
(% PIGS)

	DAIRY	CATTLE	HOGS	GRAIN
1986	3	3	81	3
1981	4	6	72	5
1976	4	6	66	7

Figure 11 COST STRUCTURE OF FARROWING ENTERPRISES GREATER THAN 80% SPECIALIZED 1986

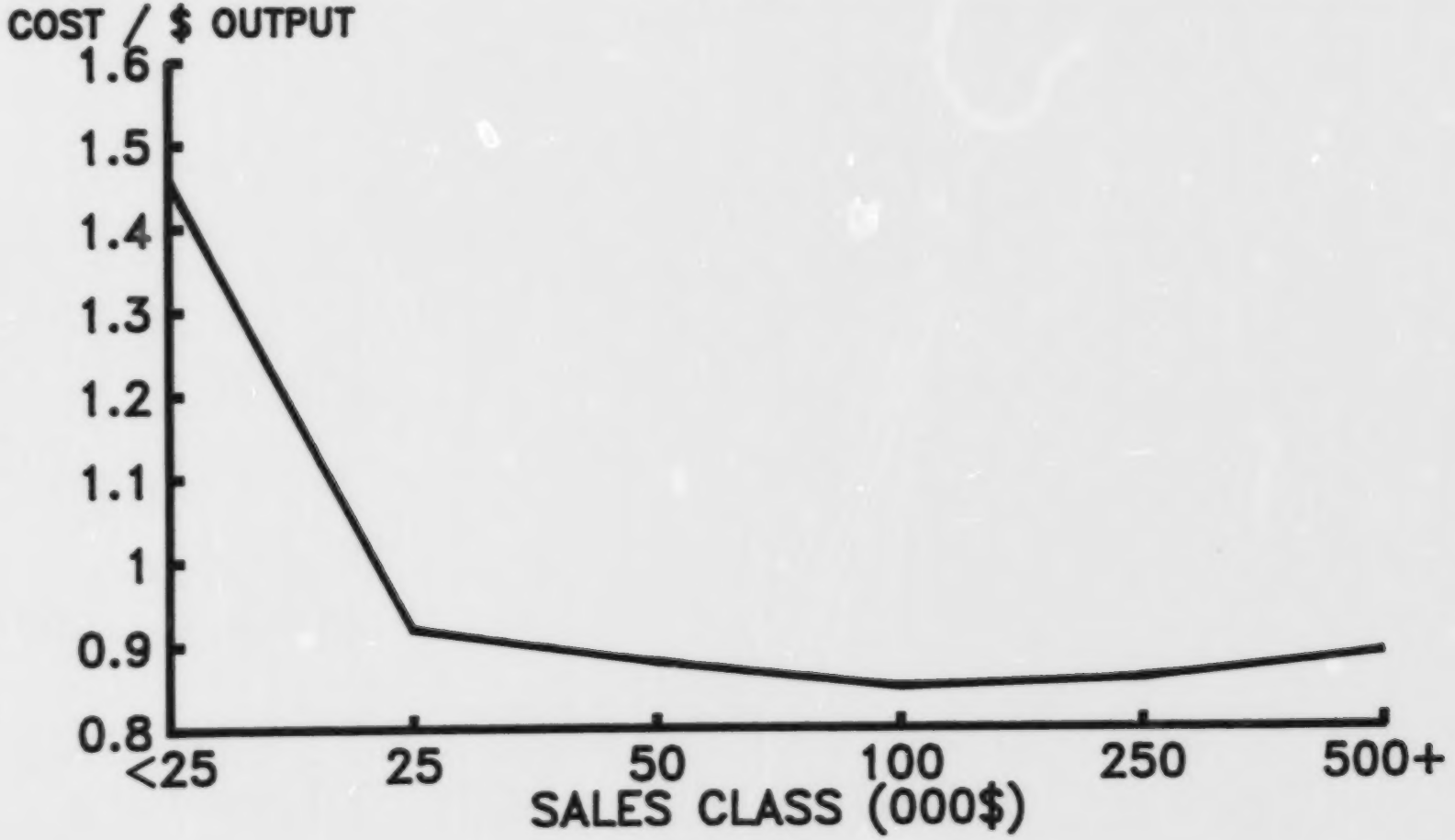


Figure 12 COST STRUCTURE OF FINISHING ENTERPRISES GREATER THAN 80% SPECIALIZED 1986

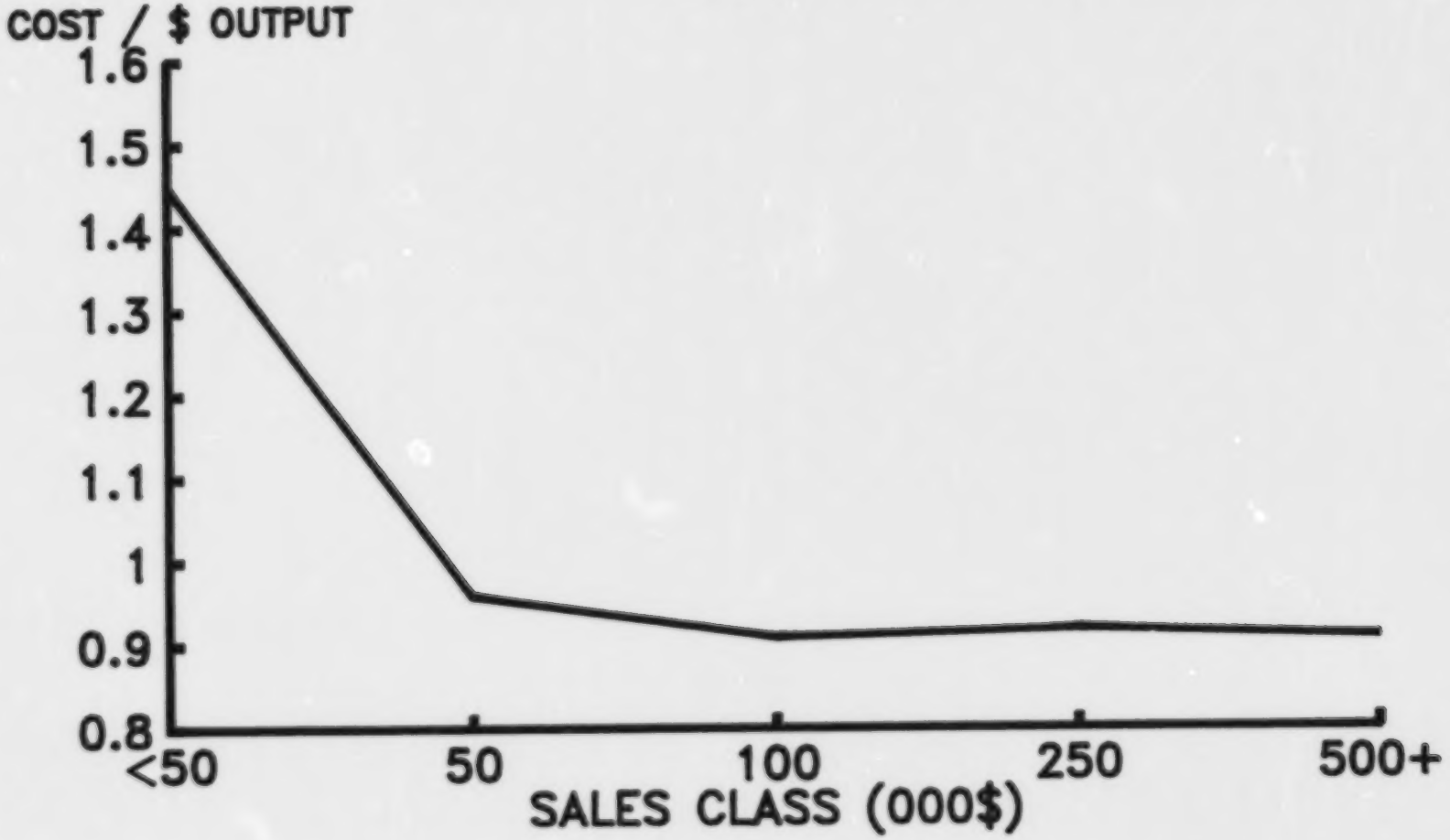
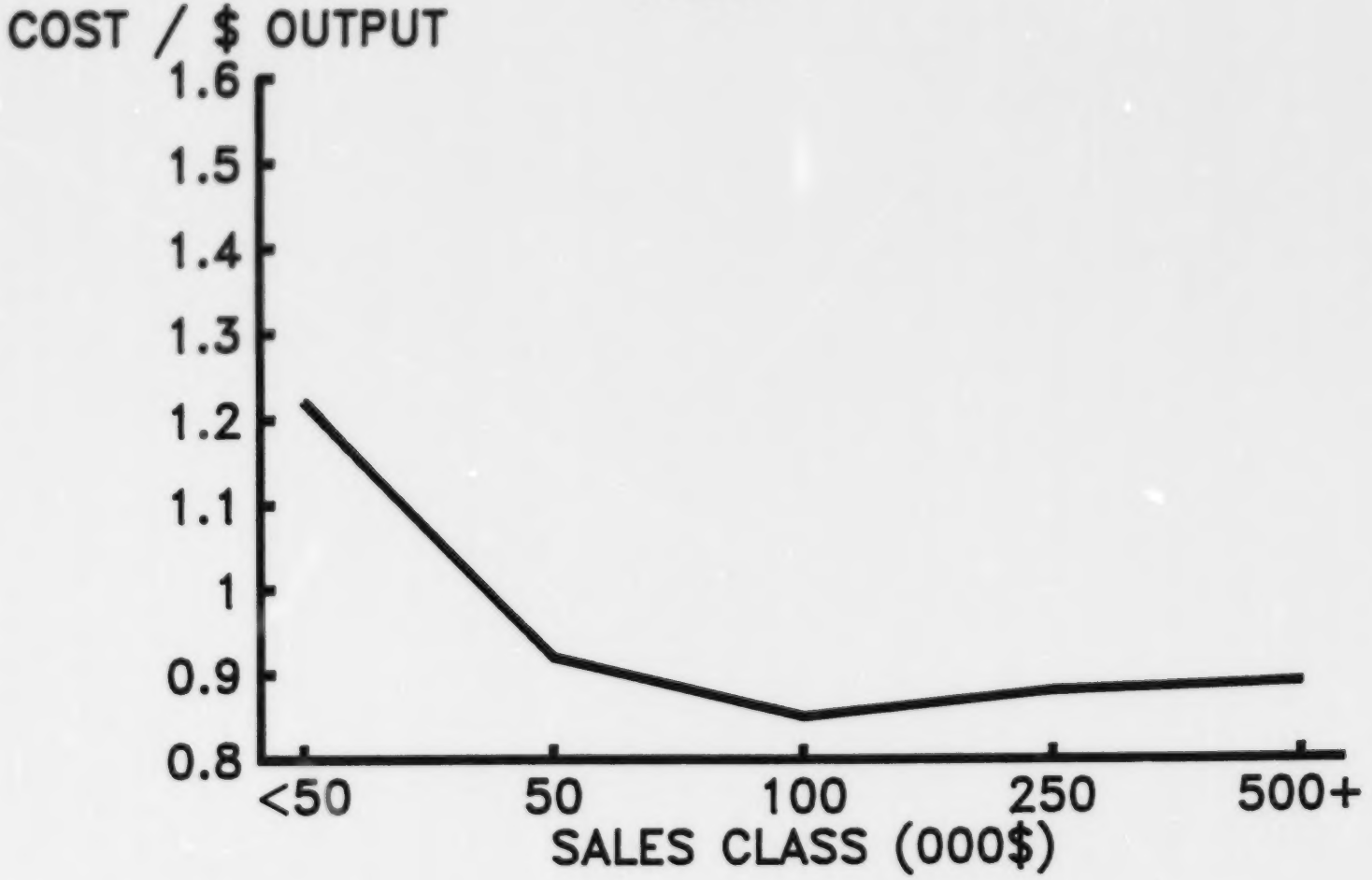


Figure 13 COST STRUCTURE OF FARROW TO FINISH ENTERPRISES GREATER THAN 80% SPECIALIZED 1986



total profits per farm increase even if costs do not fall. Operating costs are covered in the sales class of between 25 to 50 thousand dollars for farrowing operations and in the sales class of 50 to 100 thousand dollars for farrow to finish and finishing operations. It is not known what fixed costs are and so it is not possible to tell if total costs are decreasing. Logic would suggest that total costs are declining or firms would not be operating in the larger sized categories.

2.5 Financial Structure

Financial structure is important because it determines the resiliency of the firm, its ability to withstand instability in commodity markets and its growth potential. A farm which carries a high debt load will be vulnerable to commodity price instability. When cash flow is negative there is less ability to borrow which could result in exit from the industry in times of low commodity prices because capital would not be available to help weather short term problems. On the other hand, a farm with too little outside debt may not achieve optimum growth rates.

Solvency is one indicator of the financial health of the farm in that it represents the relationship between the current market value for the assets and the claims others have on the

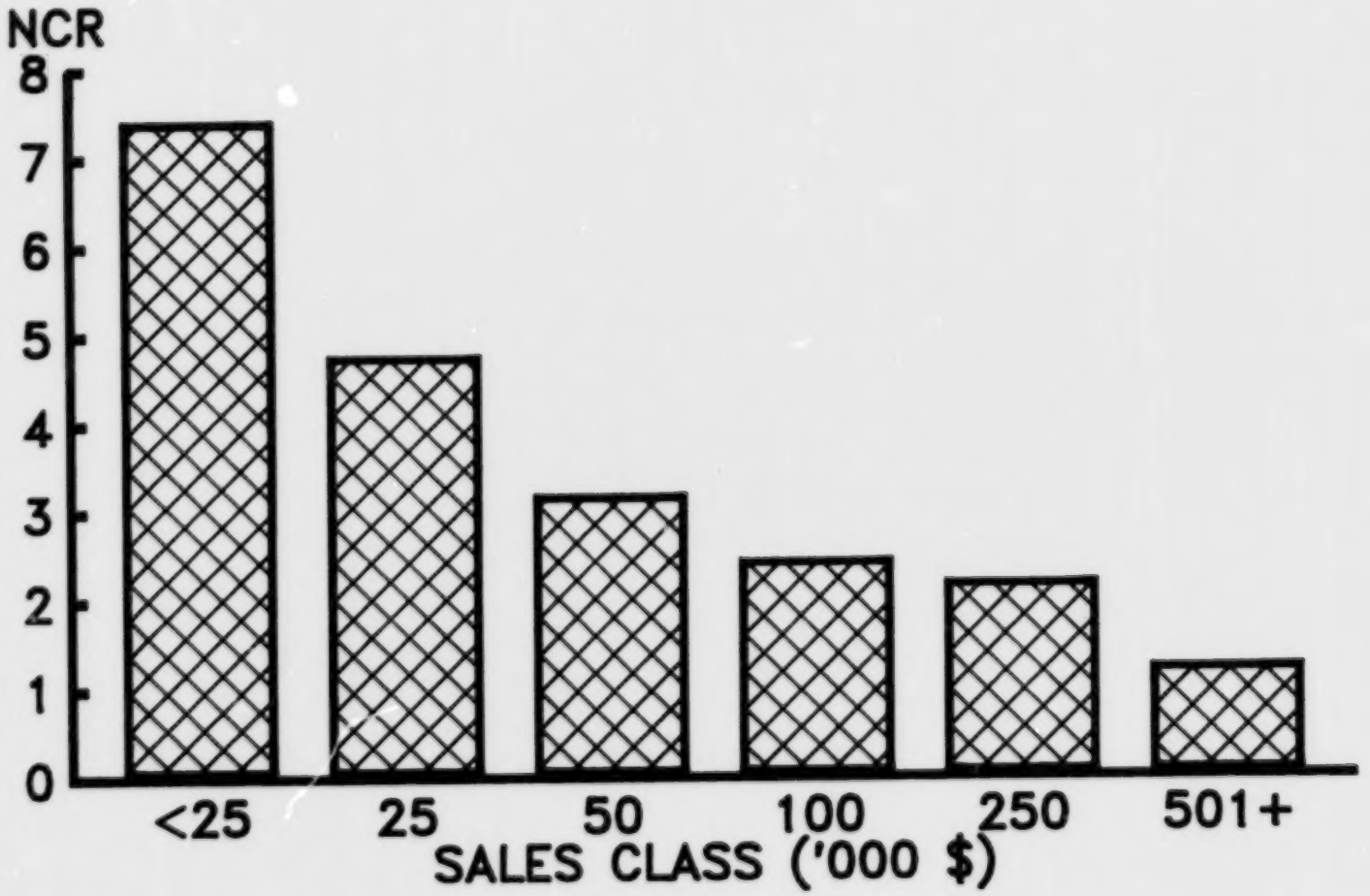
business. It measures the ability of the farm to pay all obligations if liquidation was necessary. It is important because of its affect on the farms' ability to borrow.

Two measures of solvency are the net capital ratio and the leverage ratio, both of which are based on relationships between assets and liabilities. Net capital ratios (assets/debt) were calculated using total value of assets from the 1986 Census and from estimates of debt using interest paid from the Census and the average interest rate on debt outstanding in 1986 (Figure 14). Using the previous definition of solvency, a farm must have a ratio of assets to debts of greater than one to be solvent and the lower the ratio the more vulnerable the farm because of reduced borrowing ability. This ratio, for the hog sector, declines significantly to the point where the very large farms appear to be close to insolvency. This does not mean that they are not viable or that cash flow is not being met. However, because of reduced borrowing ability these farms may be unable to weather short term market fluctuations and may experience problems in the future because of low commodity prices.

3.0 The Sheep and Lamb Sector

There were 10,959 farms reporting sheep at the 1986 Census

Figure 14 FINANCIAL STRESS BY SALES CLASS



with a total inventory of 700,935 for an average size of 64 sheep per farm (Figures 15 and 16). Farm numbers and inventories increased from 1976 to 1981 and then declined in 1986 leaving approximately the same number of farms as in 1976 with larger inventories for an increased farm size of about 14%. Distribution by herd size shows that the greatest number of sheep are in herds of 200 to 500 sheep (Figures 17 and 18). The Lorenz curves show that the industry is quite concentrated but that concentration has decreased slightly since 1976 (Figure 19).

4.0 The Cattle Sector

The cattle sector has two important subsectors. The cow/calf subsector produces calves and the feeding sector purchases calves and feeds them for eventual slaughter. There are many potential steps in the marketing chain and producers may participate in all or may specialize. There are many possible combinations of enterprises within this sector as well as levels of specialization. The two main subsectors were analyzed separately for simplicity. The analysis will use beef cows to represent the cow/calf subsector and steers to represent the feeding subsector. Steers were used to represent the feeding subsector for comparison over time, as it was not possible to separate beef heifers from dairy heifers in the 1976 Census.

Figure 15 NUMBER OF FARMS REPORTING SHEEP
CANADA

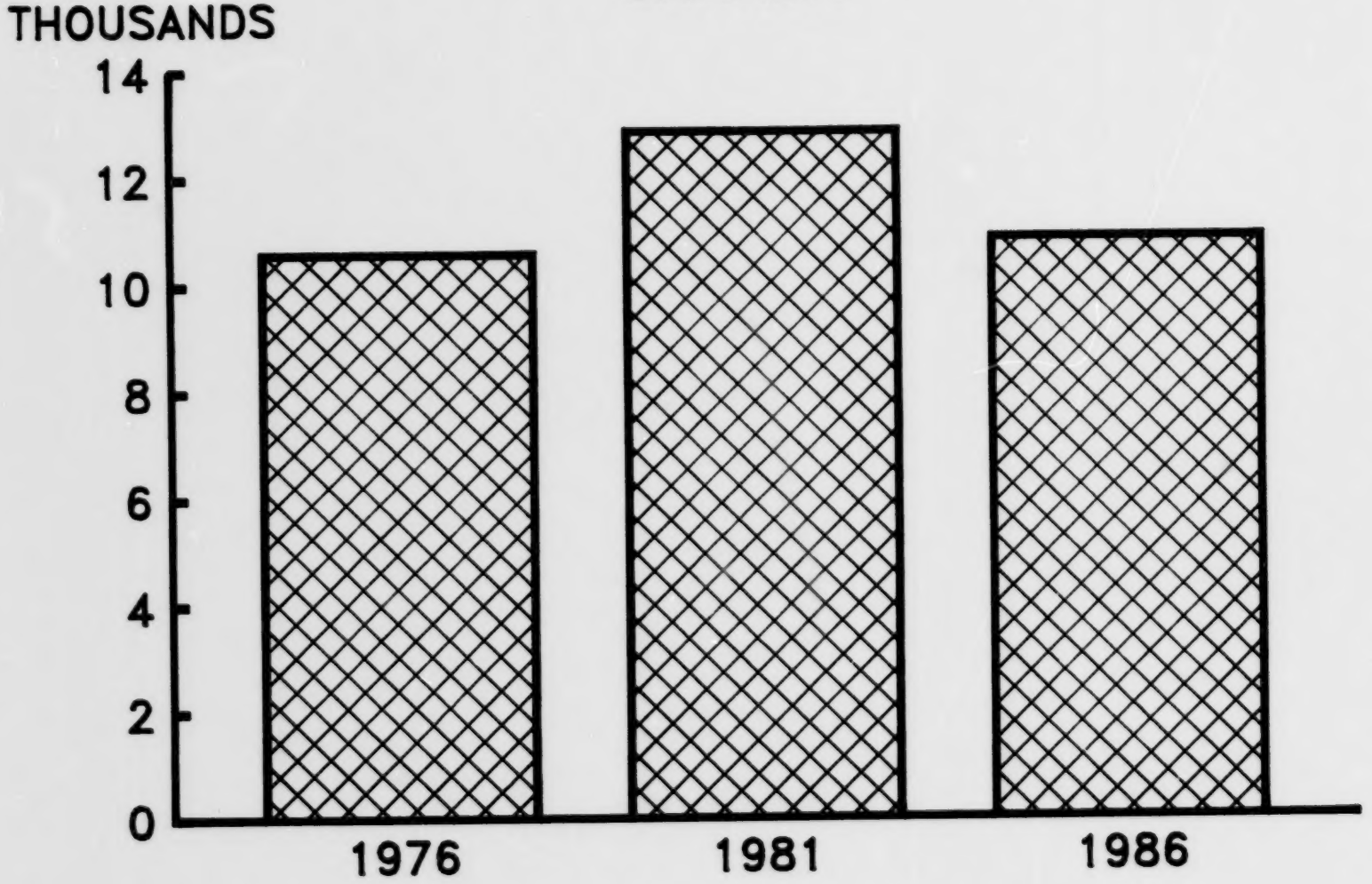


Figure 16 NUMBER OF SHEEP
CANADA

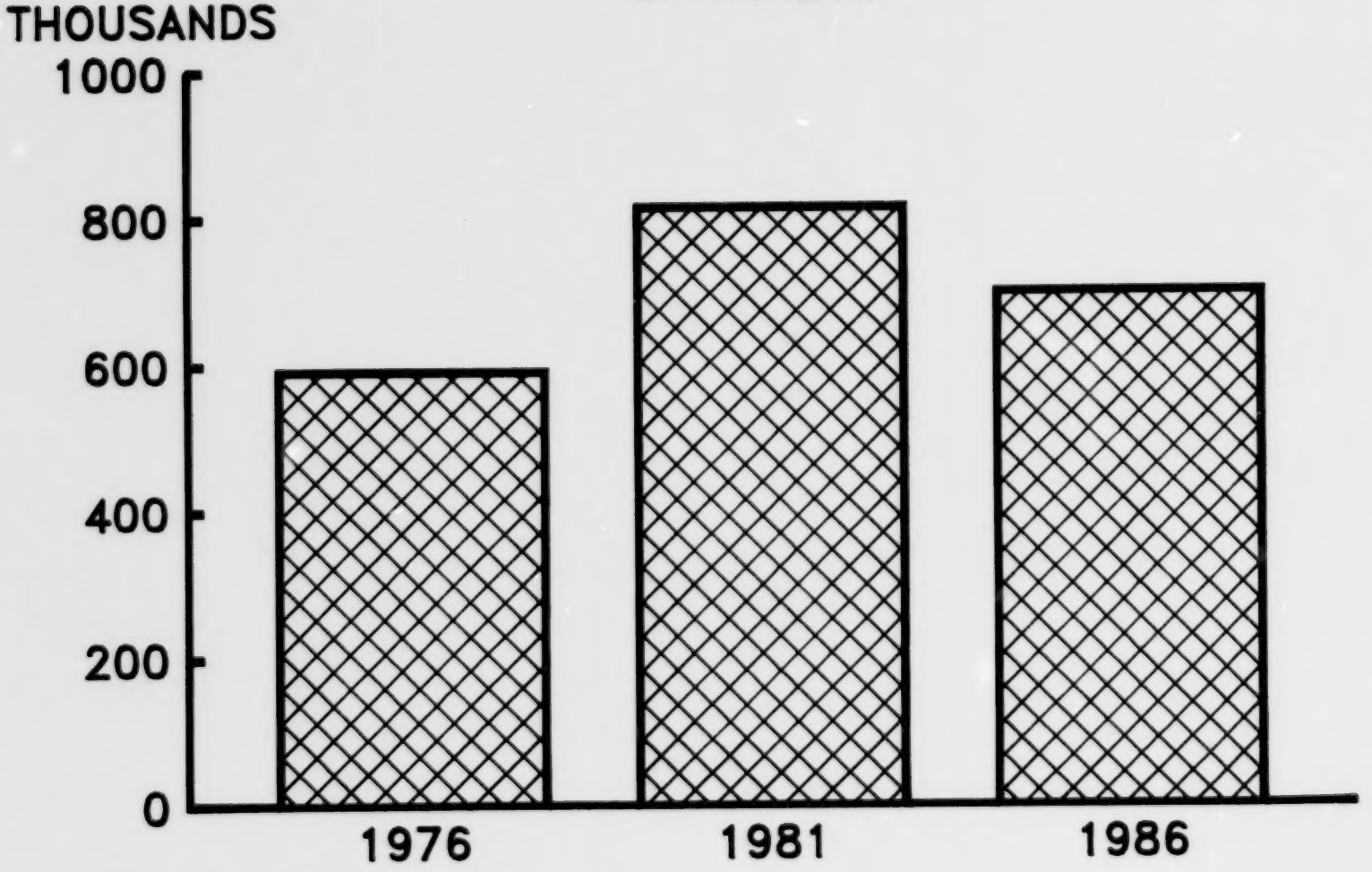


Figure 17 DISTRIBUTION OF SHEEP ON FARMS CANADA

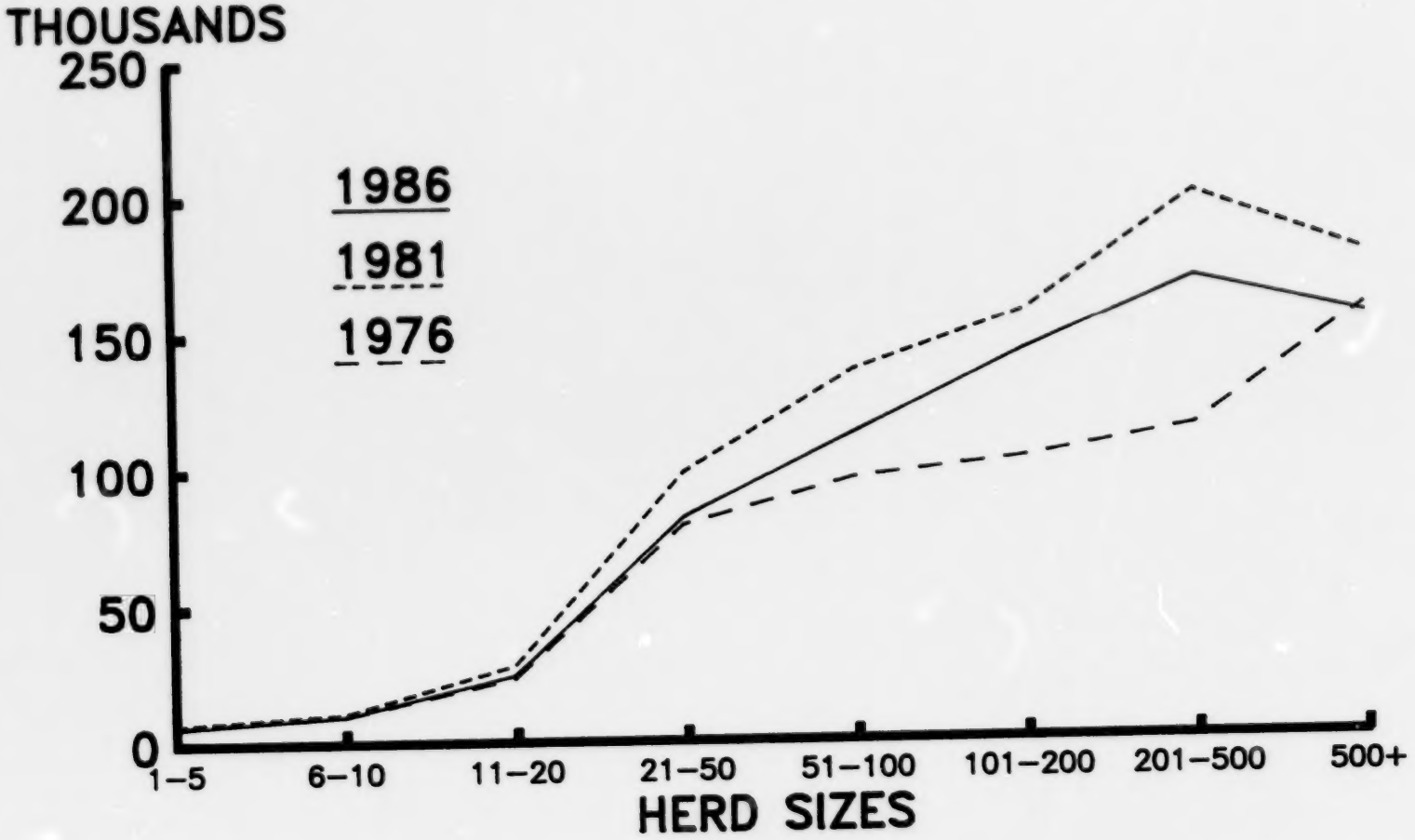


Figure 18 DISTRIBUTION OF SHEEP FARMS CANADA

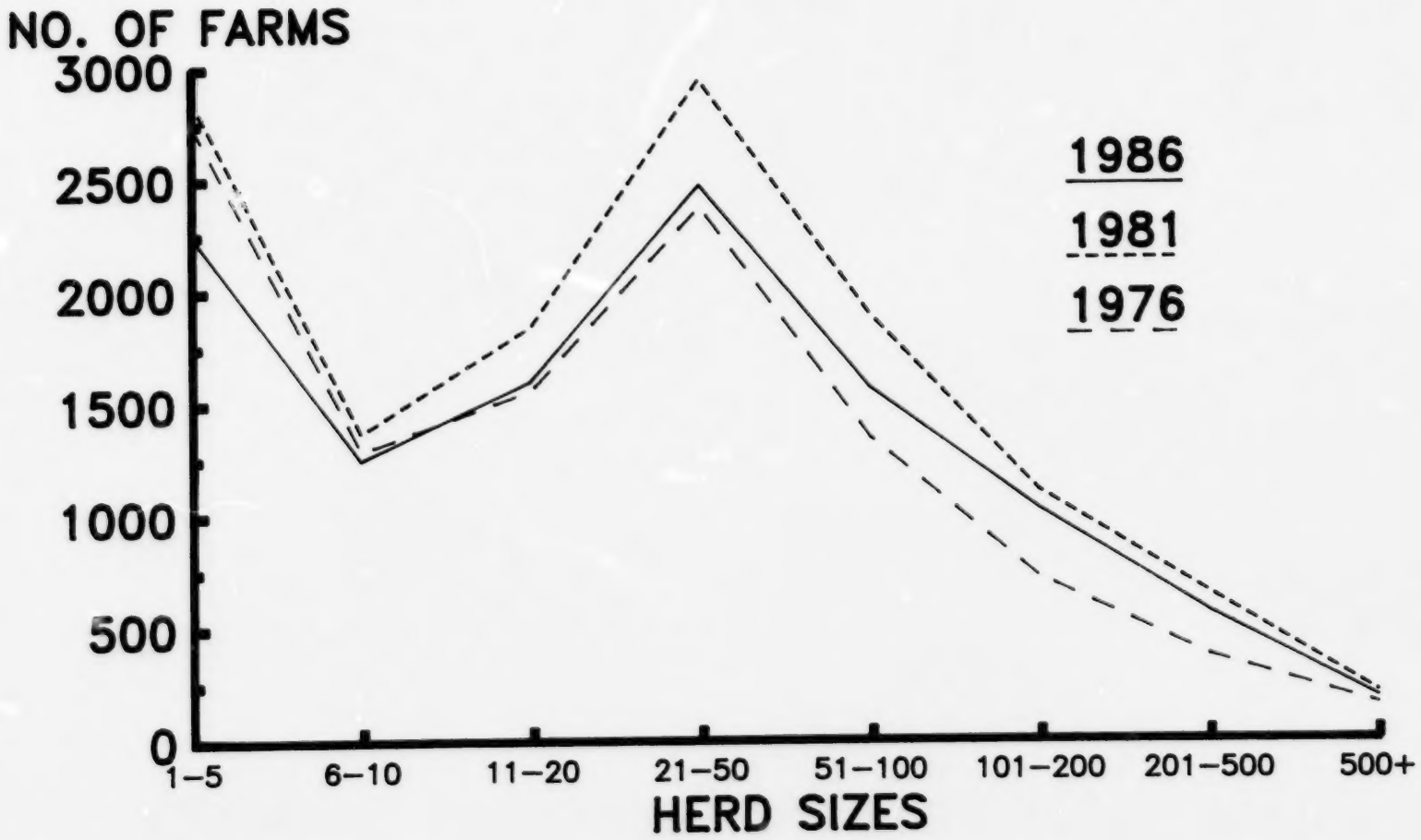


Figure 19 CONCENTRATION OF THE SHEEP SECTOR CANADA

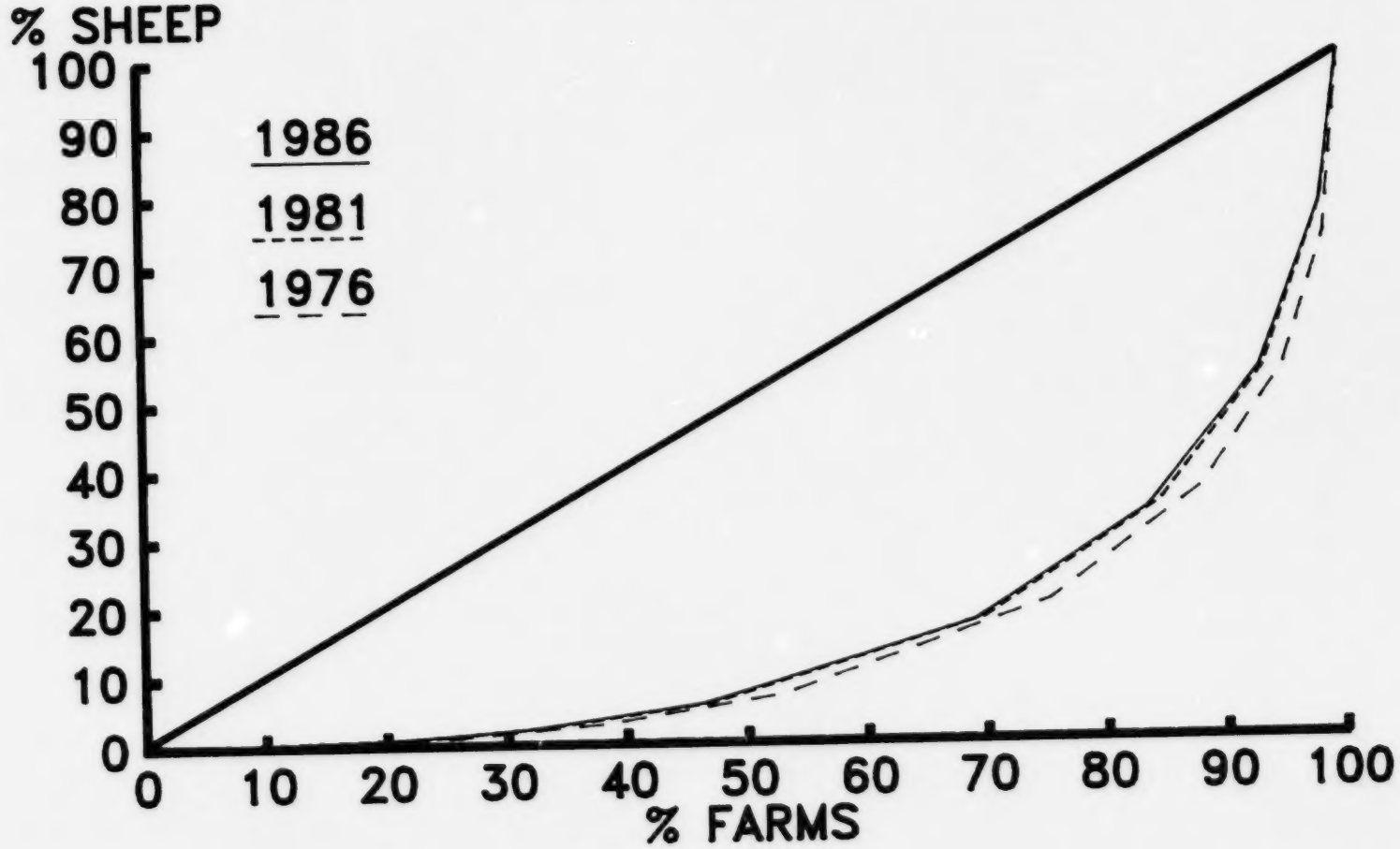


Figure 20 NUMBER OF FARMS WITH BEEF COWS

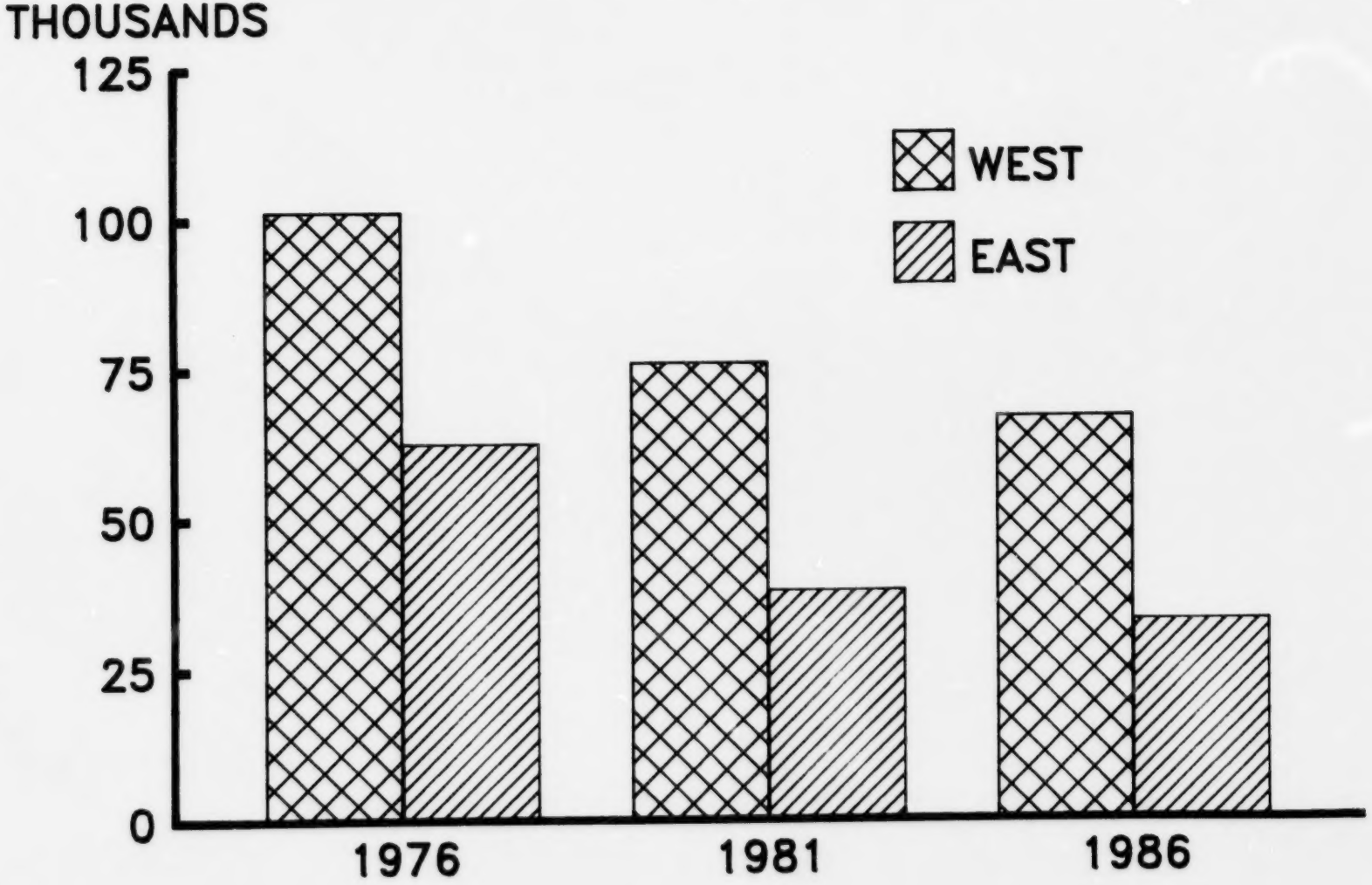
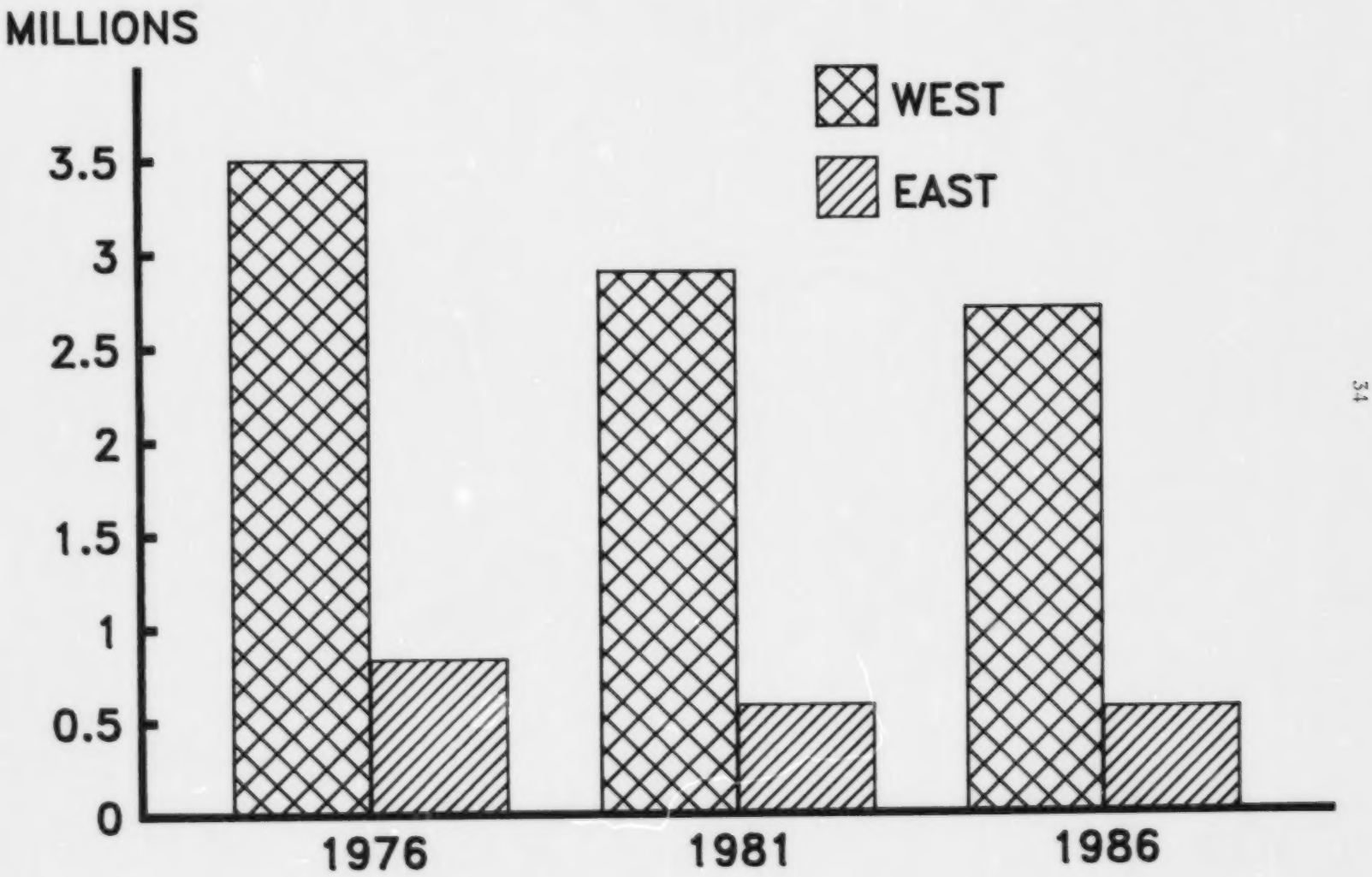


Figure 21 NUMBER OF BEEF COWS ON FARMS



4.1 The Cow-calf Subsector

4.1.1 Size and Number

The cow/calf subsector has had nearly proportional declines in both farm numbers and inventories. The June 3, 1986 Census reports 99,921 farms with beef cows and a total of 3,242,041 beef cows for an average of 32 per farm, about the same size as in 1981. Most of the changes in this subsector occurred in the period 1976 to 1981. The number of farms reporting beef cows declined since 1976 (Figure 20). As well, western Canada has by far the greatest number of farms with beef cows. The numbers of beef cows on those farms shows the same trend; western Canada has the largest number of beef cows but cow numbers have declined, in both regions, since 1976 (Figure 21). The balance between eastern and western Canada was maintained throughout the period of herd liquidation. It is apparent that the beef cow herd is located largely in western Canada.

4.1.2 Concentration

The Lorenz curves show that the cow/calf subsector, as represented by the beef cow herd, is not very concentrated and that this has not changed in 10 years (Figure 23). In

Figure 22 DISTRIBUTION OF BEEF COWS

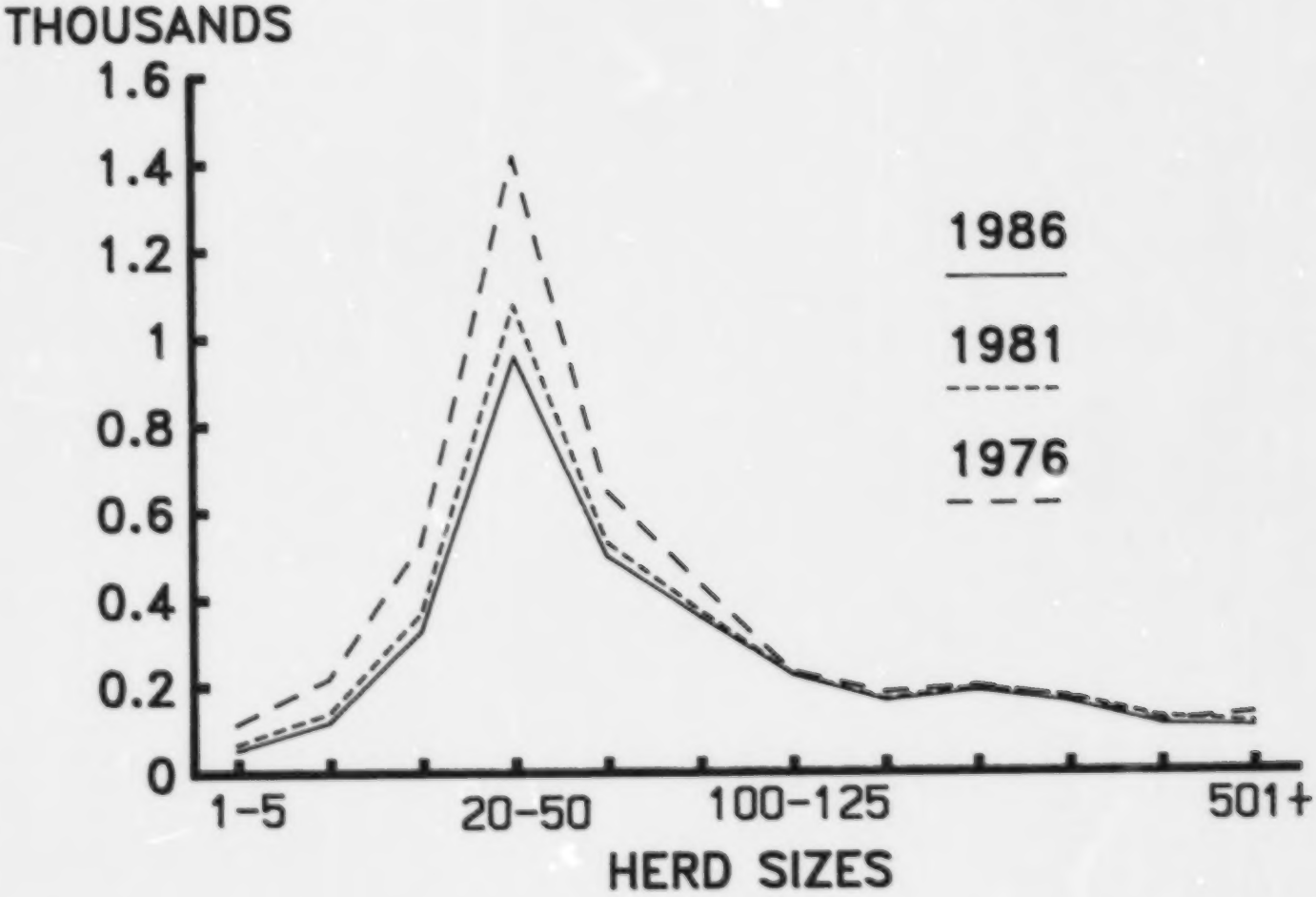


Figure 23 CONCENTRATION OF THE BEEF COW SECTOR

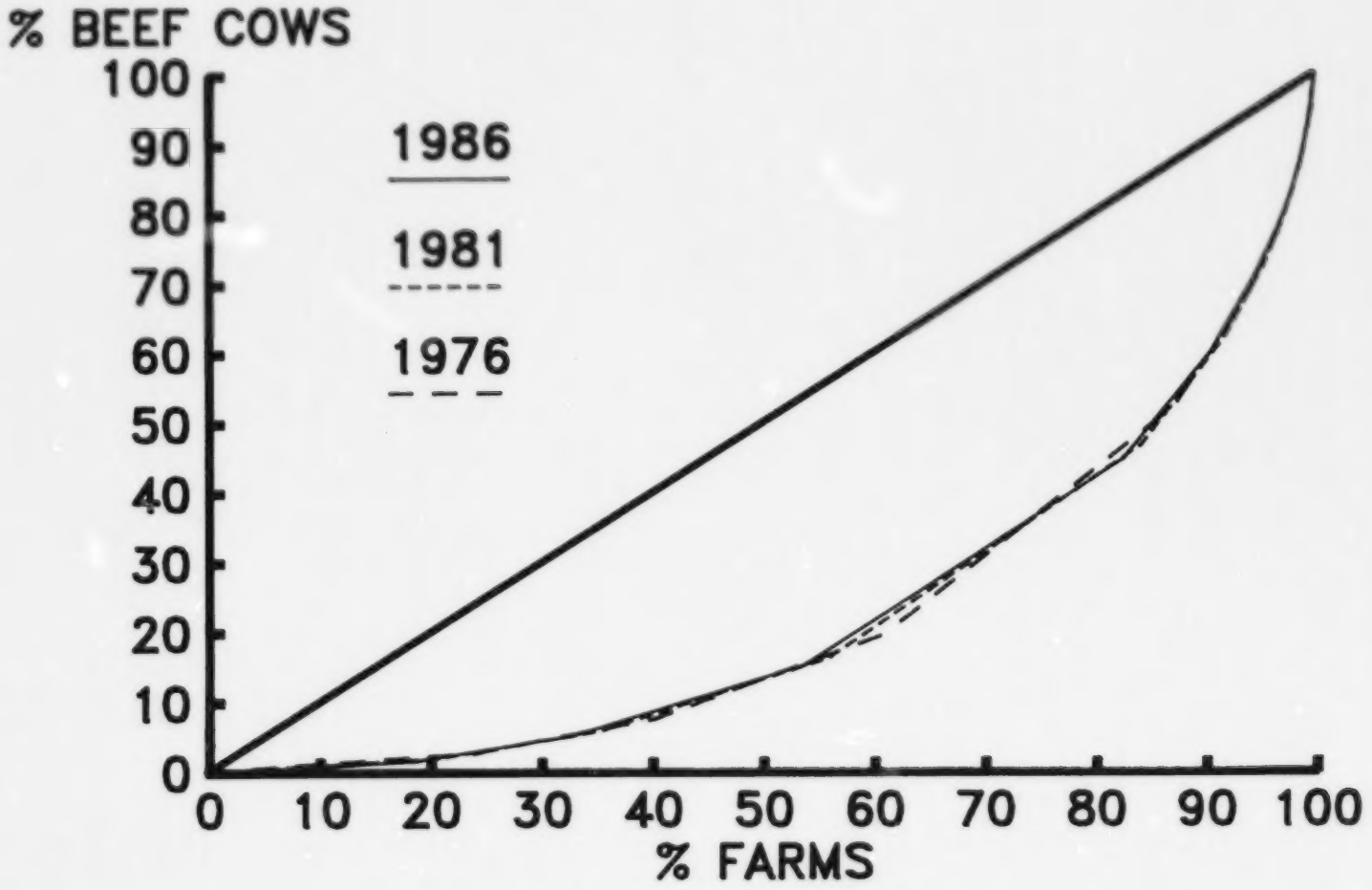


Figure 24 CONCENTRATION OF THE BEEF COW SECTOR, EASTERN CANADA

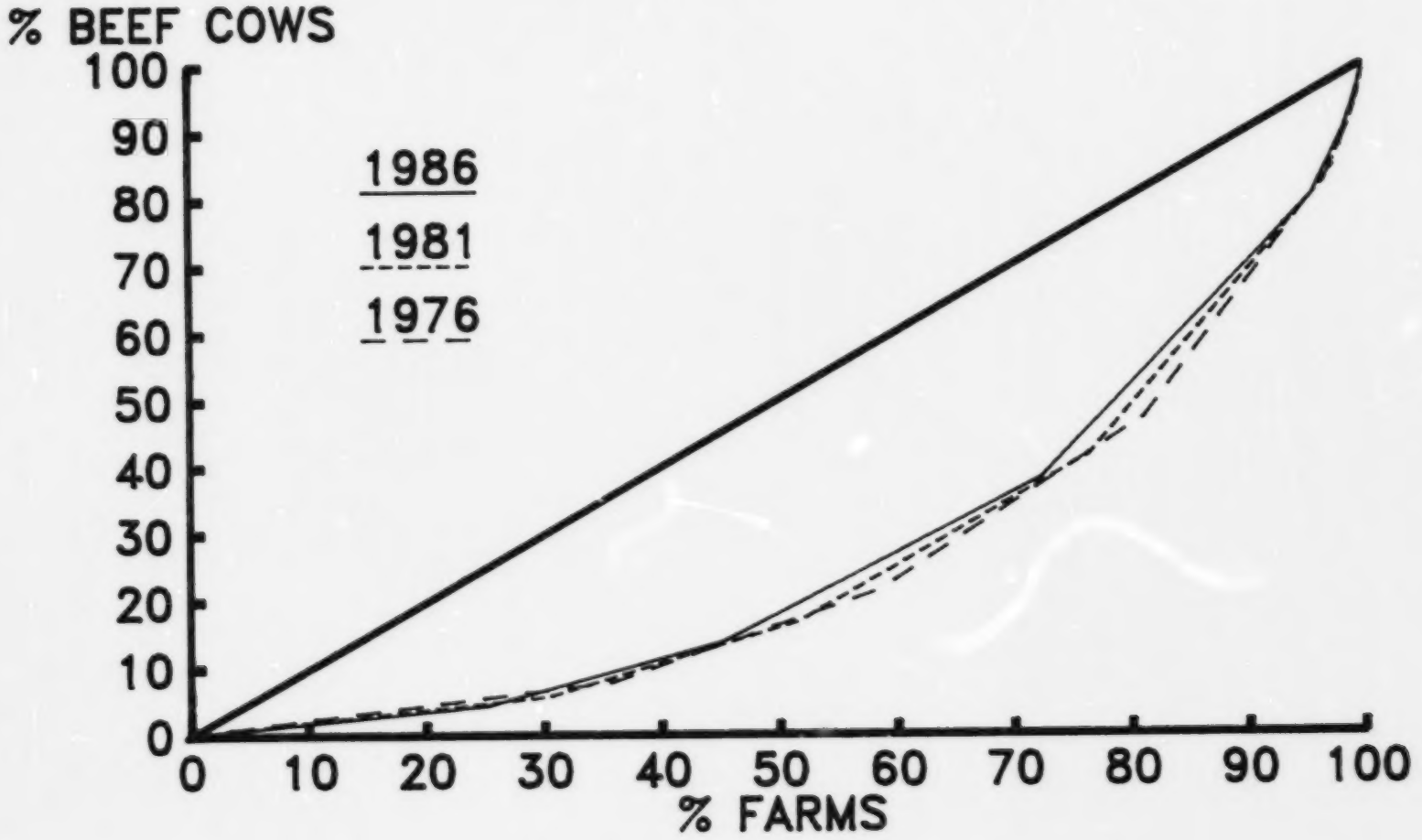
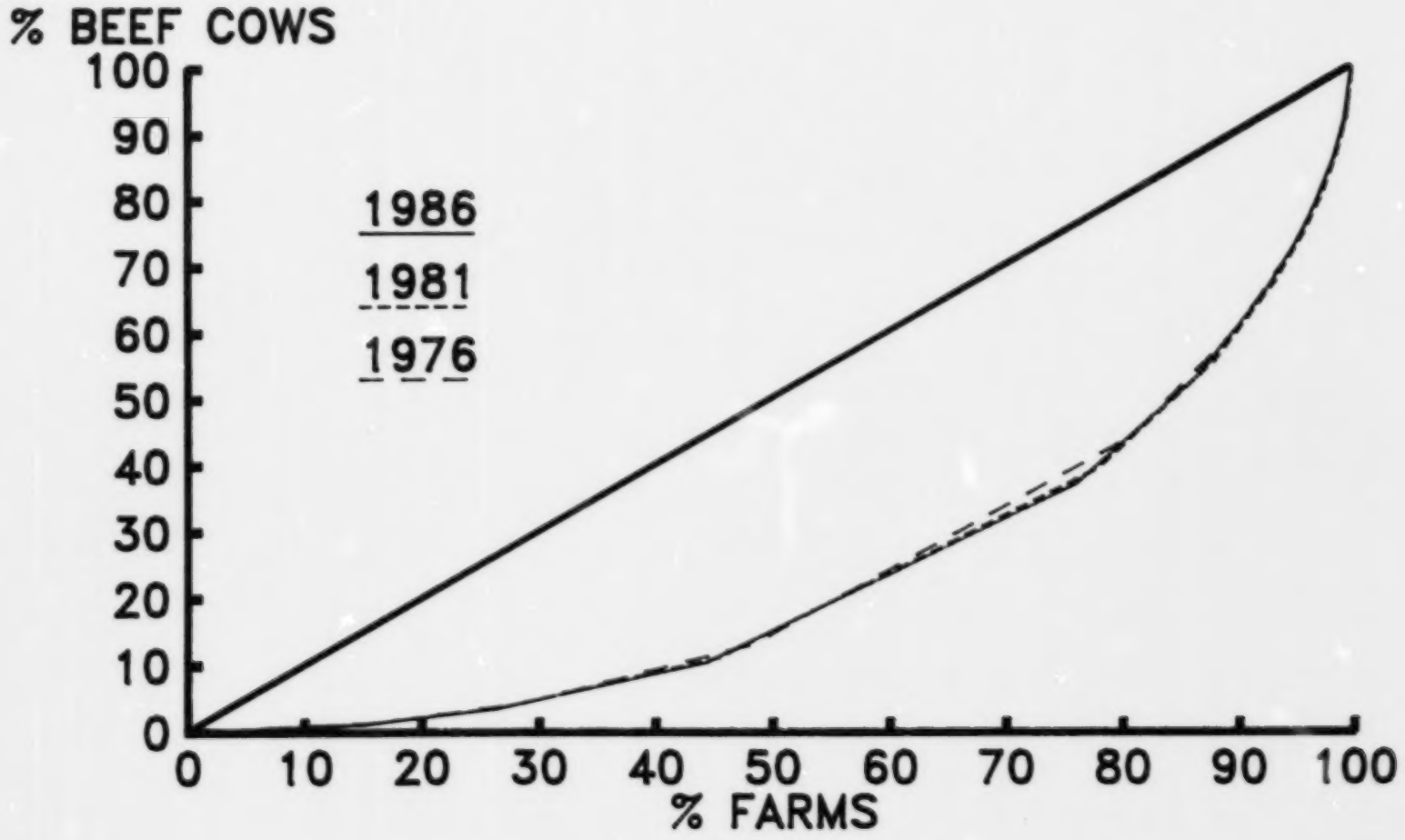


Figure 25 CONCENTRATION OF THE BEEF COW SECTOR, WESTERN CANADA



fact, studies by Bollman and Ehrensaft show that concentration in this subsector has not altered since 1966. The sector is dominated by many farms with smaller sized herds. Further analysis shows that there is little difference in concentration between the eastern and western regions (Figure 24 and 25). The lack of concentration may be indicative of the cost neutrality with respect to increased size. It is also possible that there has not been introduction of new technology into this sector which could change the production structure.

This is further supported by the distribution of beef cows by herd size which shows that most of cows are held in herd sizes of between 20 to 50 cows and that this pattern has not altered in 10 years (Figure 22). This category has 30% of the beef cows and corresponds to the average herd size.

4.2 The Feeding Subsector

As with the beef cow subsector most of the feeding activity is centered in western Canada. The percentage of cattle feeding in each province is estimated from steer and heifer marketings by province of origin published by Agriculture Canada (Figure 26). Alberta is by far the largest cattle feeding province with Ontario second. There has not been much change in the distribution of feeding by province over

Figure 26 CATTLE FEEDING ACTIVITY (PERCENT)

1986

1981

1976

the past ten years despite the efforts of many provinces to increase the share. Quebec has made some small gains, Saskatchewan has gained back some of the share lost in 1981 and Alberta has lost some of its share of feeding activity.

4.2.1 Size and Number

The distribution of farms with steers and steer inventories, by region, reinforces what was illustrated earlier - that the steer herd is concentrated largely in western Canada. The number of farms reporting steers has decreased in both regions since 1976 and the inventory of steers on those farms has also decreased to 1,385,756 in 1986 making the average number of steers per farm 23 which is unchanged since 1976 (Figure 27 & 28). Farm numbers and inventories have declined by about the same proportions leading to the conclusion that firms exiting the industry are causing the inventory declines.

The distribution of the steer herd shows that greatest number of steers are now held on operations of 500 steers or more which accounts for 21% of the total inventory but a further 16% are still held on small sized operations of between 20 to 50 steers (Figure 29). This distribution illustrates the variation in the feeding subsector. Many farms feed a small number of steers, probably in backgrounding programs, while a

Figure 27 NUMBER OF FARMS WITH STEERS

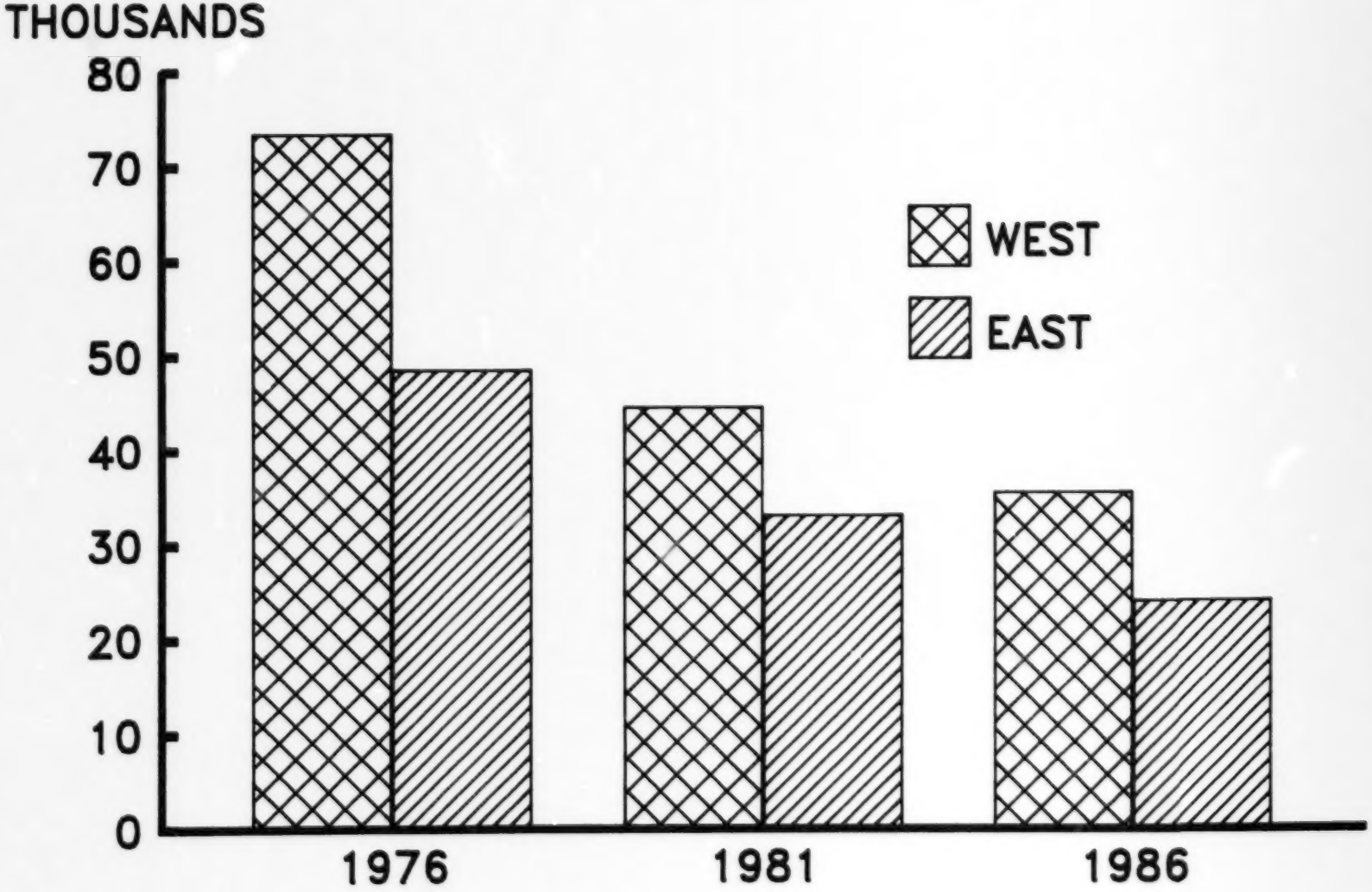


Figure 28 NUMBER OF STEERS ON FARMS

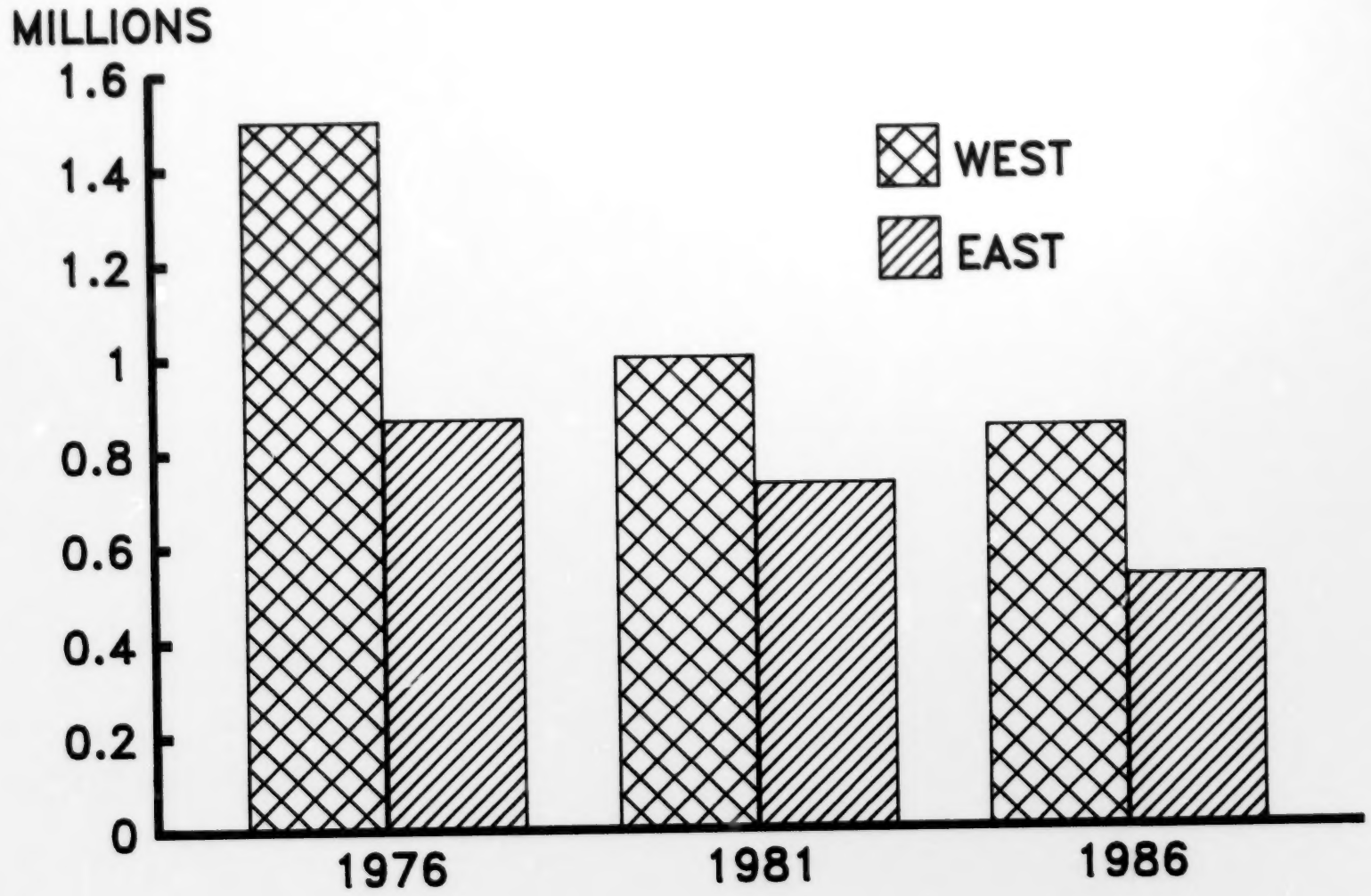
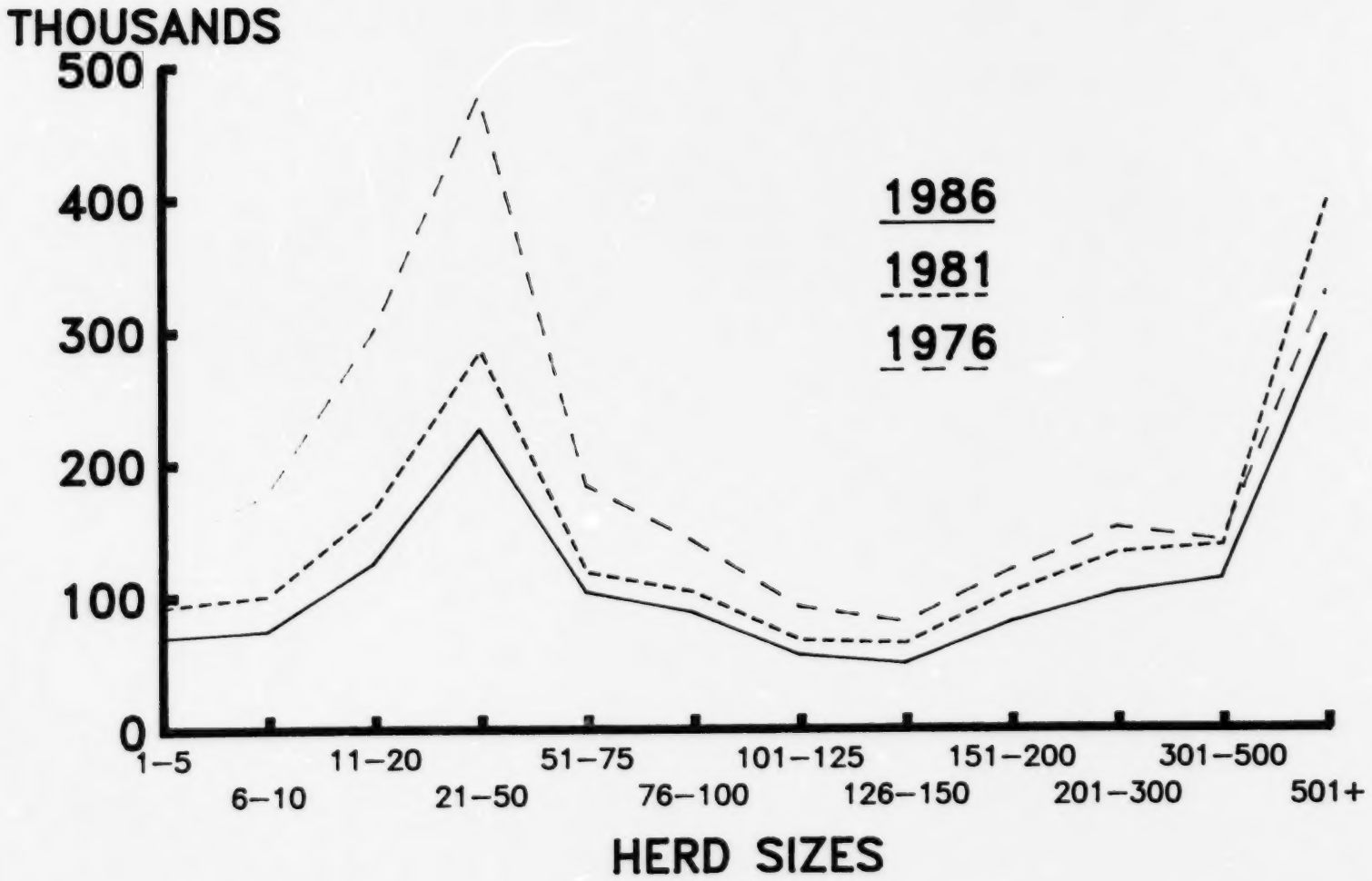


Figure 29 DISTRIBUTION OF STEERS CANADA



large percentage of production comes from large operations, probably feedlots.

4.2.2 Concentration

Concentration in the feeding subsector, as represented by the steer herd, has increased since 1976 (Figure 30). There was a shift in the Lorenz curve from 1976 to 1981 but there has been no change since 1981. This is true both for western Canada and for eastern Canada (Figures 31 and 32). These curves also show that the industry as a whole is very concentrated compared to the cow/calf subsector. The increase in concentration may be a result of rationalization of the feedlot industry.

4.3 Specialization in the Cattle Sector

Census farms reporting beef cattle were disaggregated by enterprise type in a similar manner to the hog sector using small farms, cow/calf enterprises, cow/calf plus feeding enterprises and feeding enterprises. This disaggregation is not as simple as in the case of hogs because of the many combinations of livestock enterprises possible within these classifications. For example, feeding enterprises include everything from small backgrounding operations to large feedlots. Small farms were defined as having less than nine

Figure 30 CONCENTRATION OF THE STEER HERD

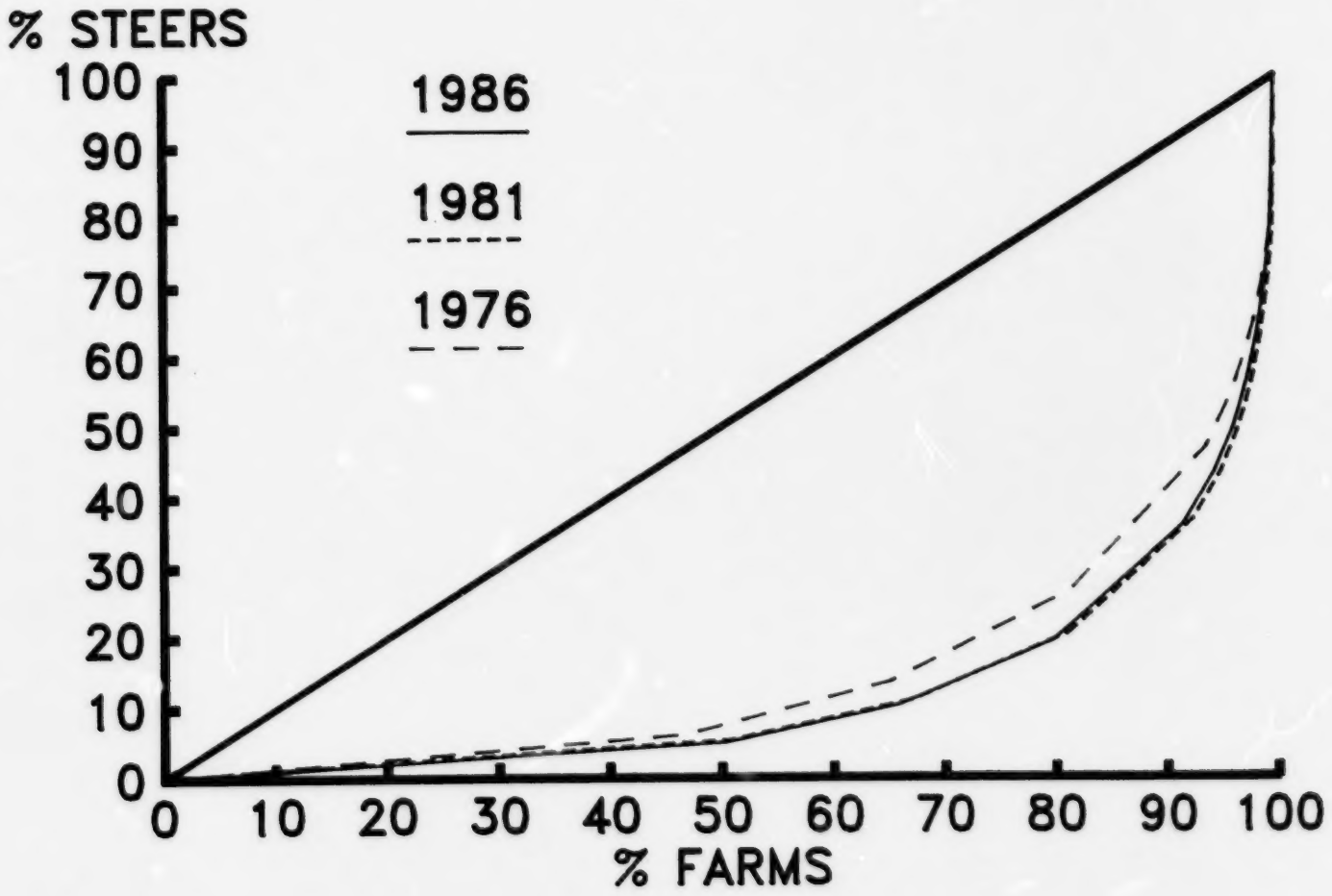


Figure 31 CONCENTRATION OF THE STEER HERD EASTERN CANADA

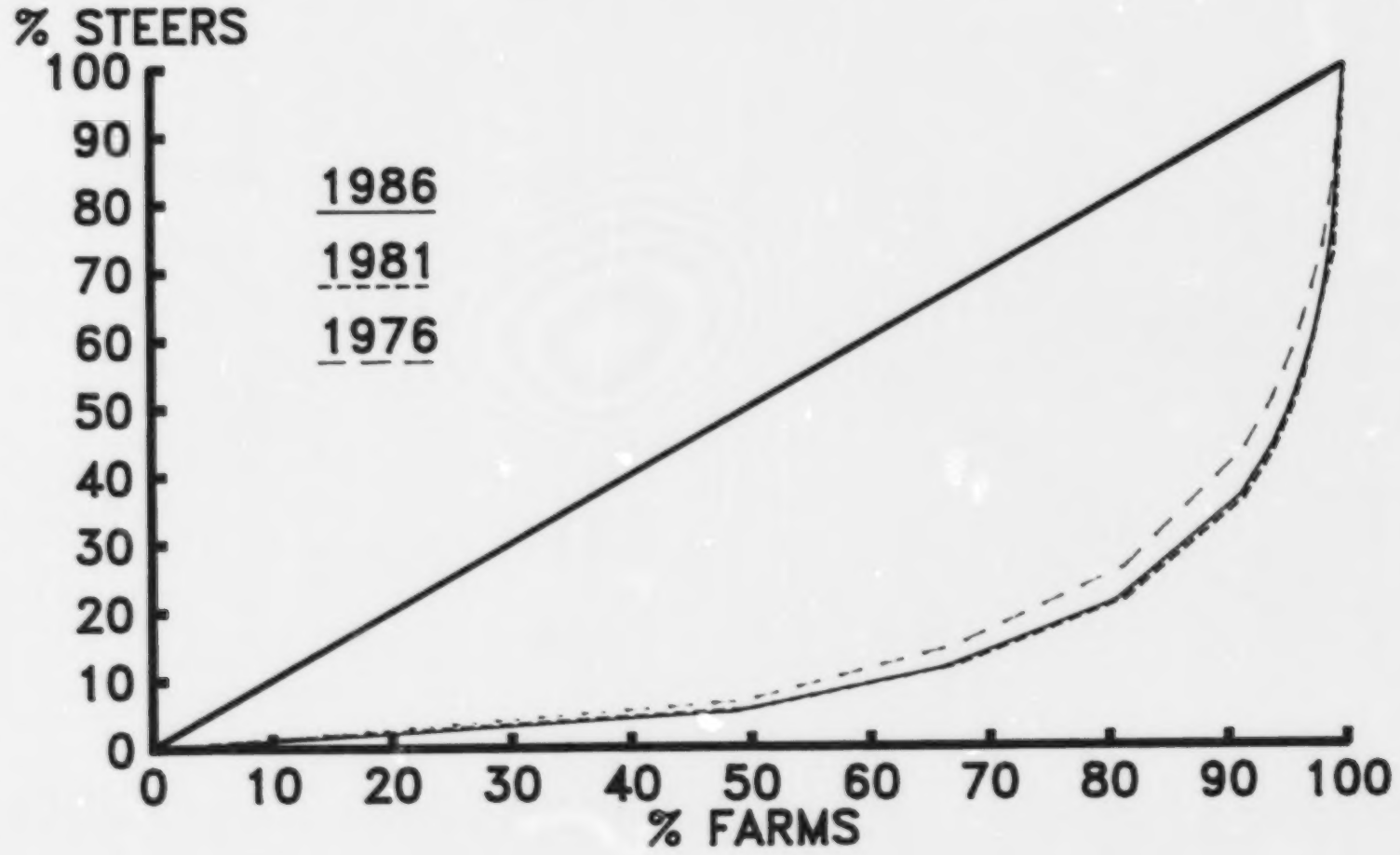
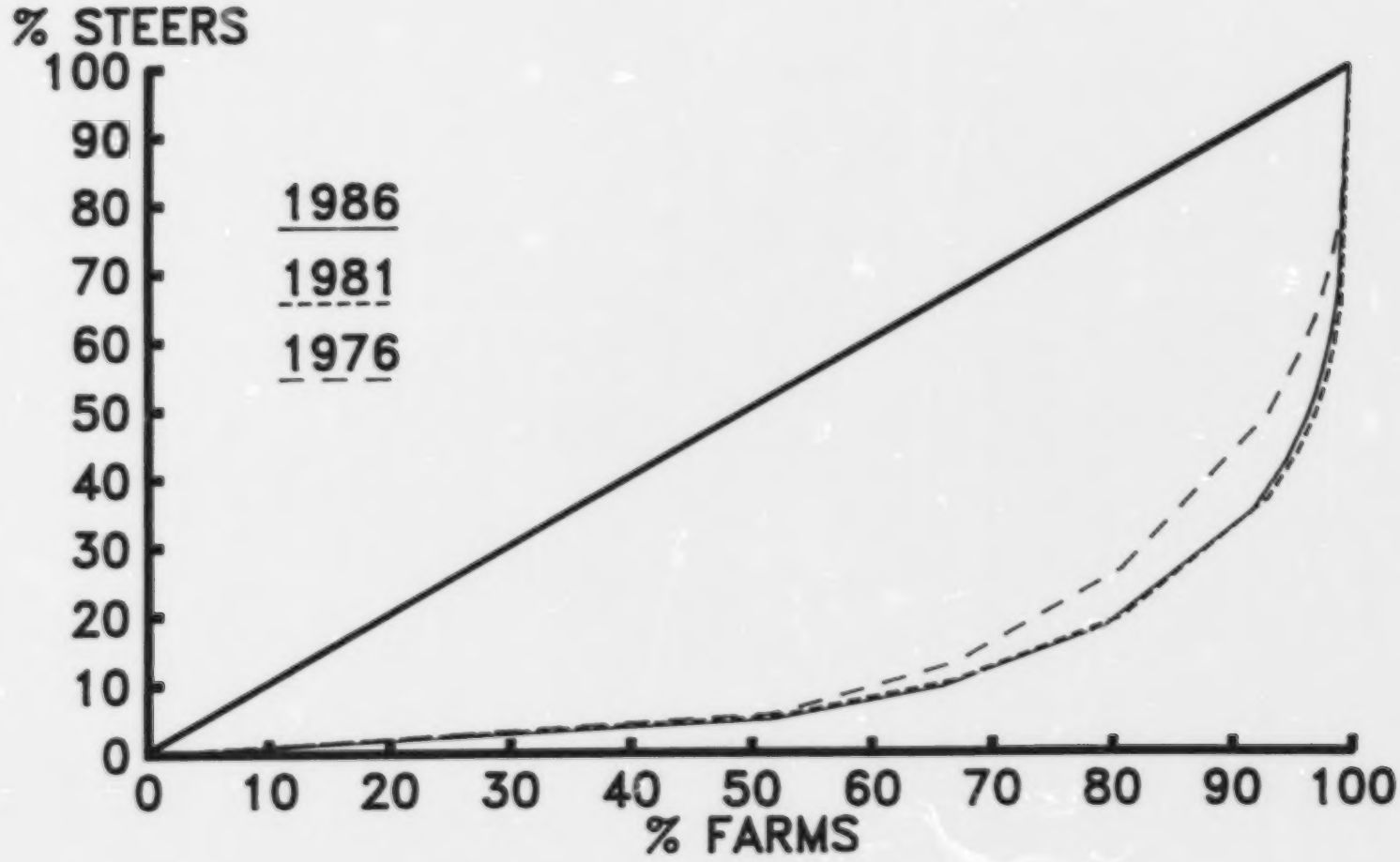


Figure 32 CONCENTRATION OF THE STEER HERD WESTERN CANADA



steers plus beef cows. These could be large farms specializing in veal production, purebreds or replacement heifers because of the definitions used. The problem arises largely because of data limitations in previous years. Alternative definitions have equal problems.

Examination of the percentage of farms by enterprise shows that the largest group are cow/calf operations and also, that this group increased as a percentage of the total in 1986 (Figure 33). Cow/calf plus feeder farms have decreased since 1976 while the percentage of feeding enterprises has remained approximately the same. The percentage of cattle on those farms showed the same trend in each enterprise but the percentage of cattle held on cow/calf farms is now much larger and predominates as opposed to 1976 when integrated operations predominated (Figure 34). Some of the balance between the percent of cattle on cow/calf versus feeding can be explained by the time of year of the census - calves would still likely be on pasture rather than in feedlots thus they show up in the cow-calf operations and not in the feeding operations. Cow/calf plus feeding operations (integrated) accounted for over forty-five percent of the beef cattle in 1976 and cow/calf about 40%. Over the years the cow/calf percentage has increased while the integrated operations have declined significantly. Feeding operations have retained about the same percentage of cattle. This represents an

Figure 33 PERCENT OF FARMS BY ENTERPRISE TYPE

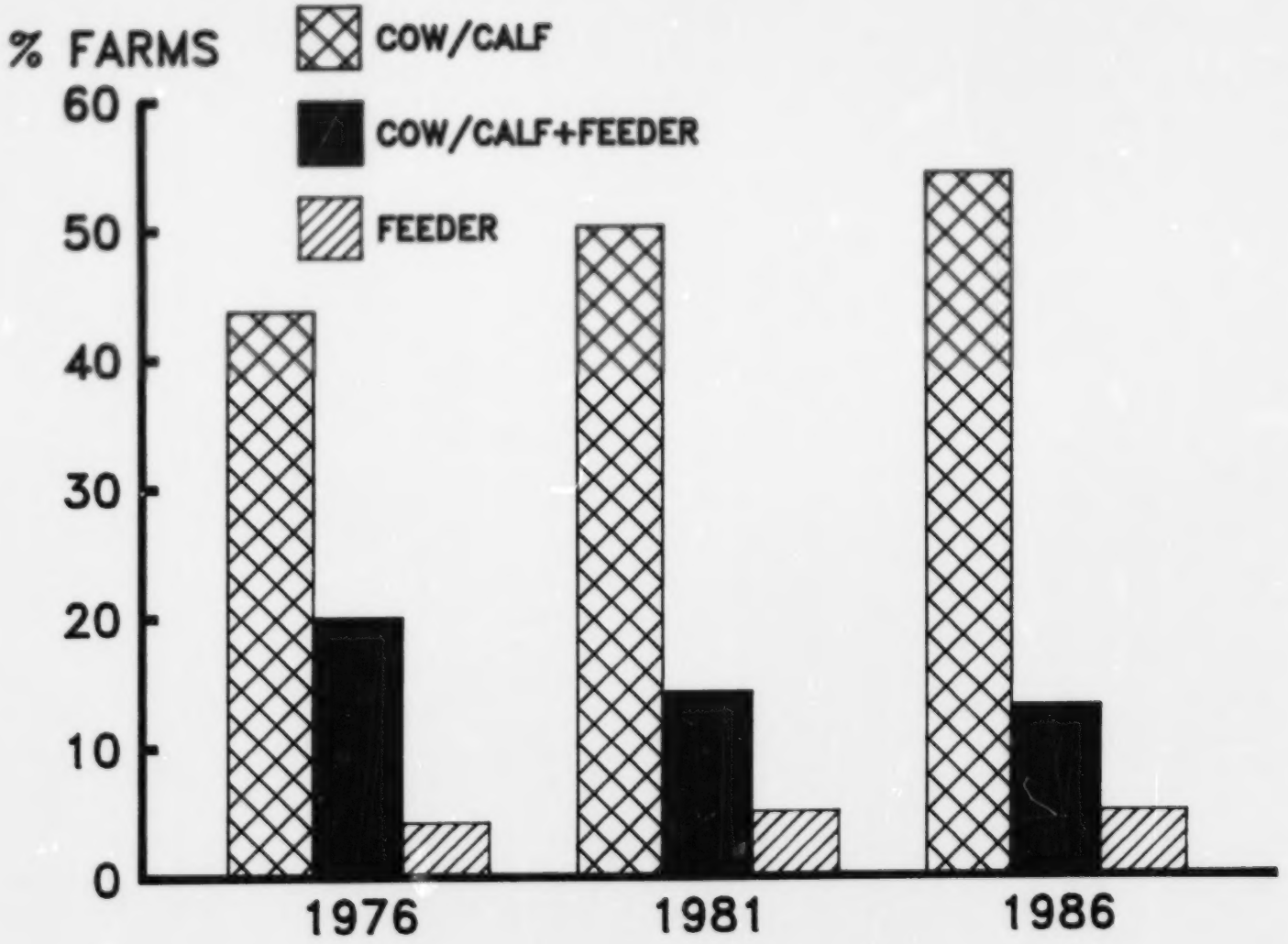
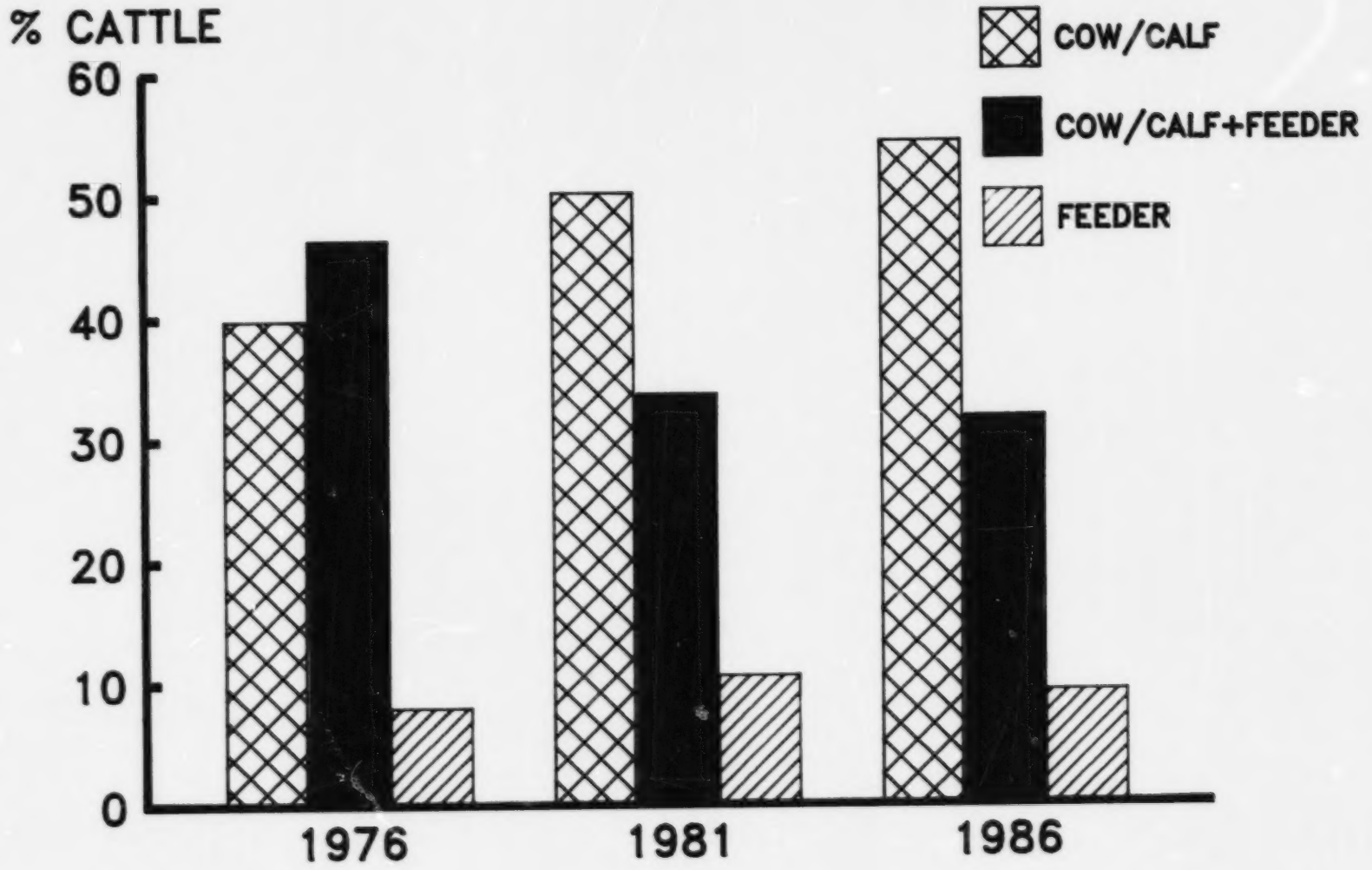


Figure 34 PERCENT OF CATTLE BY ENTERPRISE TYPE
CANADA



increase in specialization.

In terms of specialization by farm type it is evident that a high percentage of beef cattle are held on farms specializing in cattle so in terms of production this sector is fairly highly specialized (Figure 35). Comparisons for previous years are not possible from published data because the number of beef cattle is not published by typed farm - only total cattle are published and it is not possible to separate dairy cattle from beef cattle in previous years.

4.4 Economies of Size

As in the hog sector the ratios of operating cost to revenues drop as farm size increases. Economies are captured quickly and there is not much difference as the sales classes increase in size (Figures 36 to 38). All operations cover operating costs in the 25,000 to 50,000 dollar sales class. As in the hog sector there is no incentive to expand to reduce costs beyond this point.

4.5 Financial Structure

The net capital ratios decline as farms become bigger for all beef enterprises (Figure 39). However, no groups have a ratio of less than 2:1, therefore, on the average the beef

Figure 35

SPECIALIZATION OF CATTLE PRODUCTION

(% BEEF CATTLE)

	DAIRY	CATTLE	HOGS	GRAIN
1986	3	73	2	18

Figure 36 COST STRUCTURE OF FEEDING ENTERPRISES GREATER THAN 80% SPECIALIZED 1986

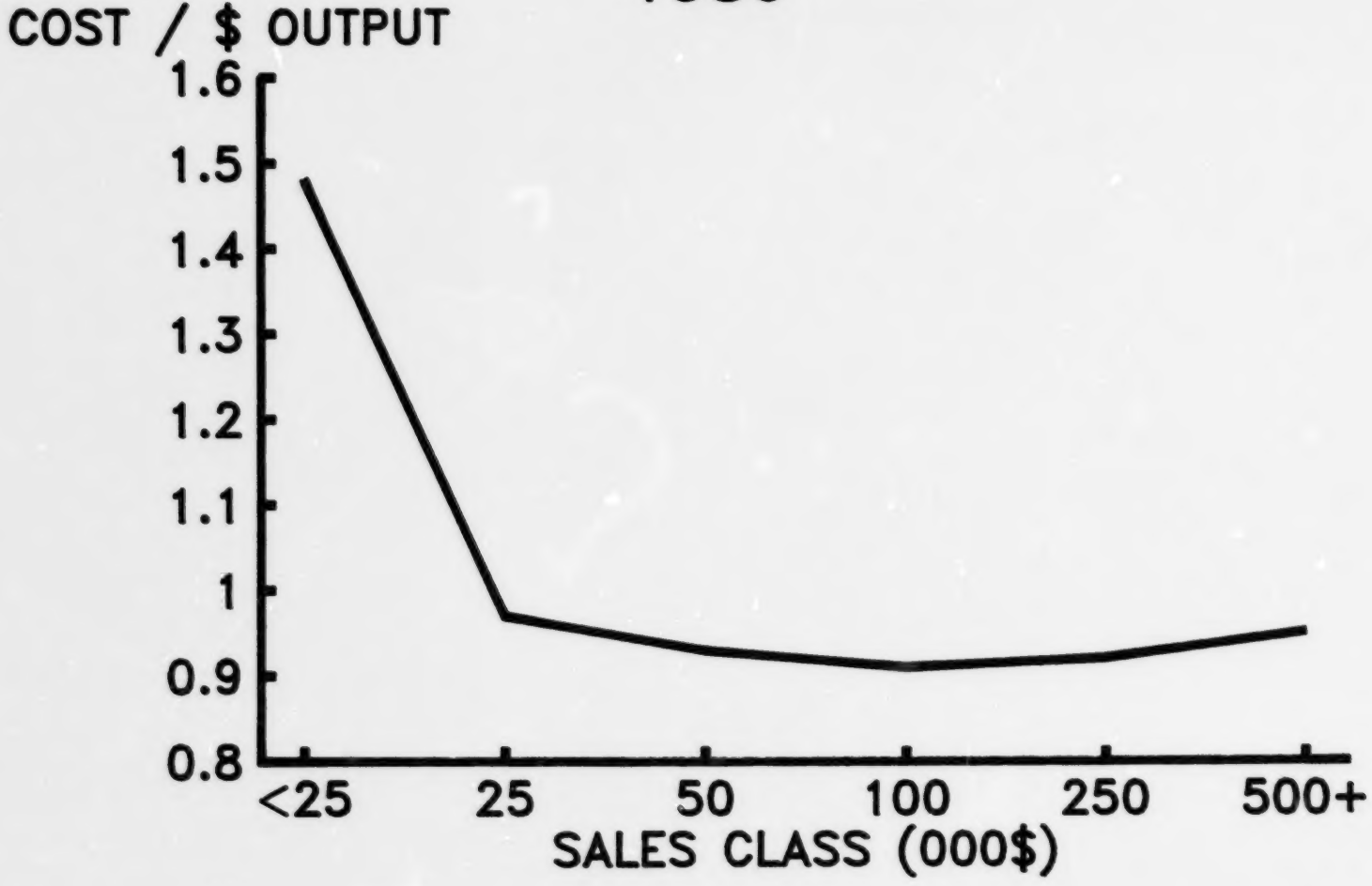


Figure 37 COST STRUCTURE OF COW–CALF ENTERPRISES GREATER THAN 80% SPECIALIZED 1986

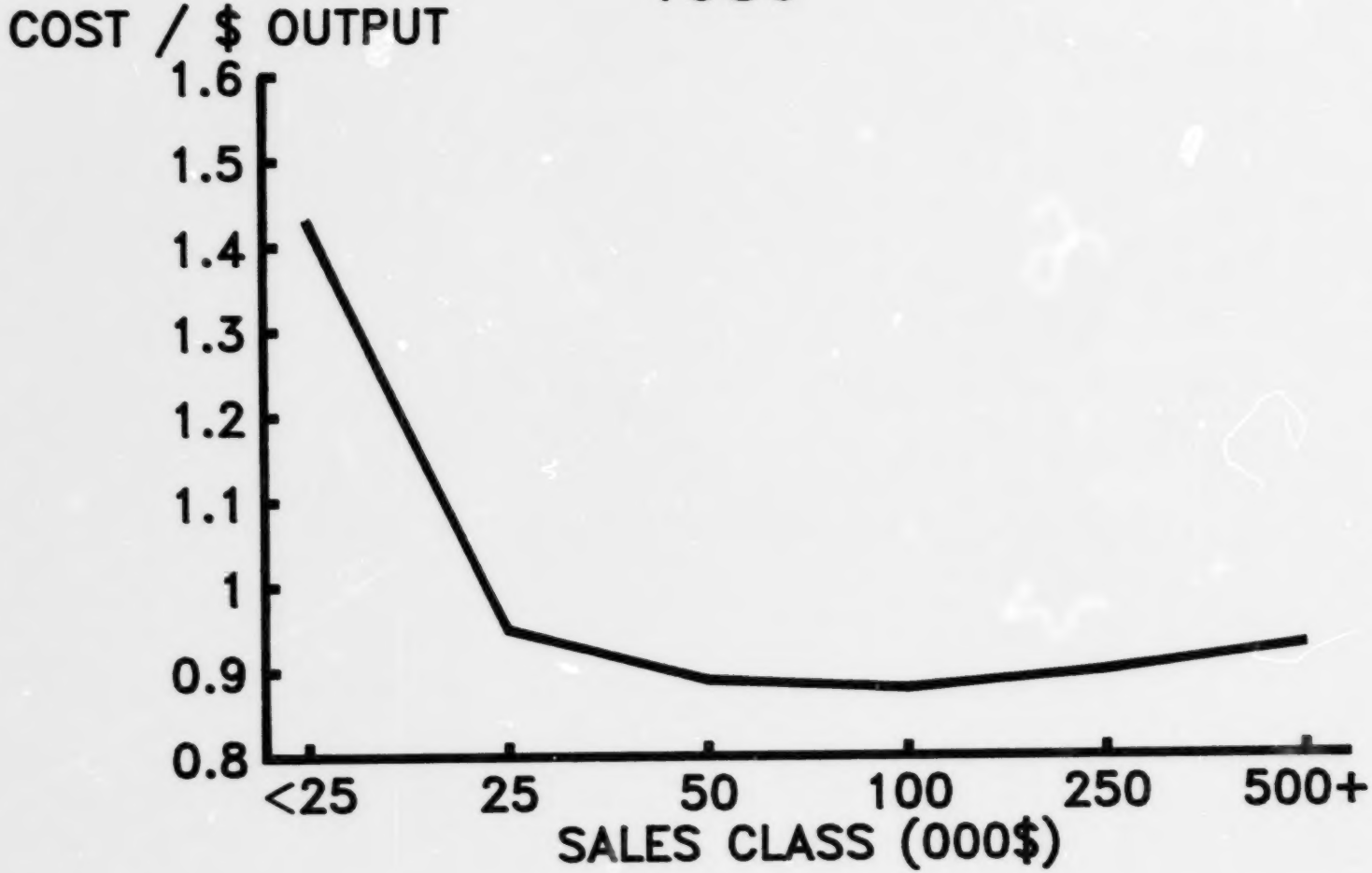


Figure 38 COST STRUCTURE OF COW/CALF+FEEDING ENTERPRISES GREATER THAN 80% SPECIALIZED 1986

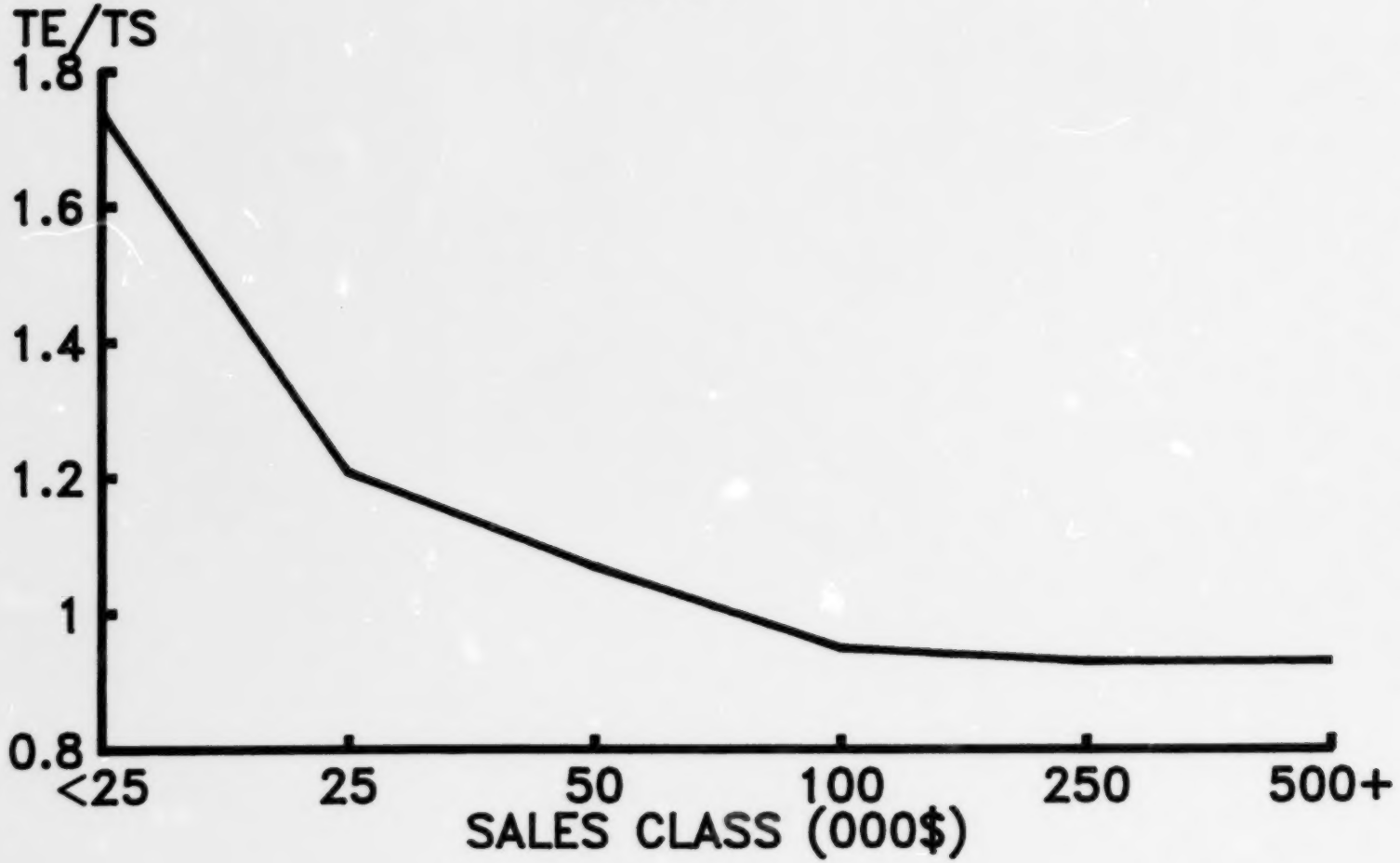
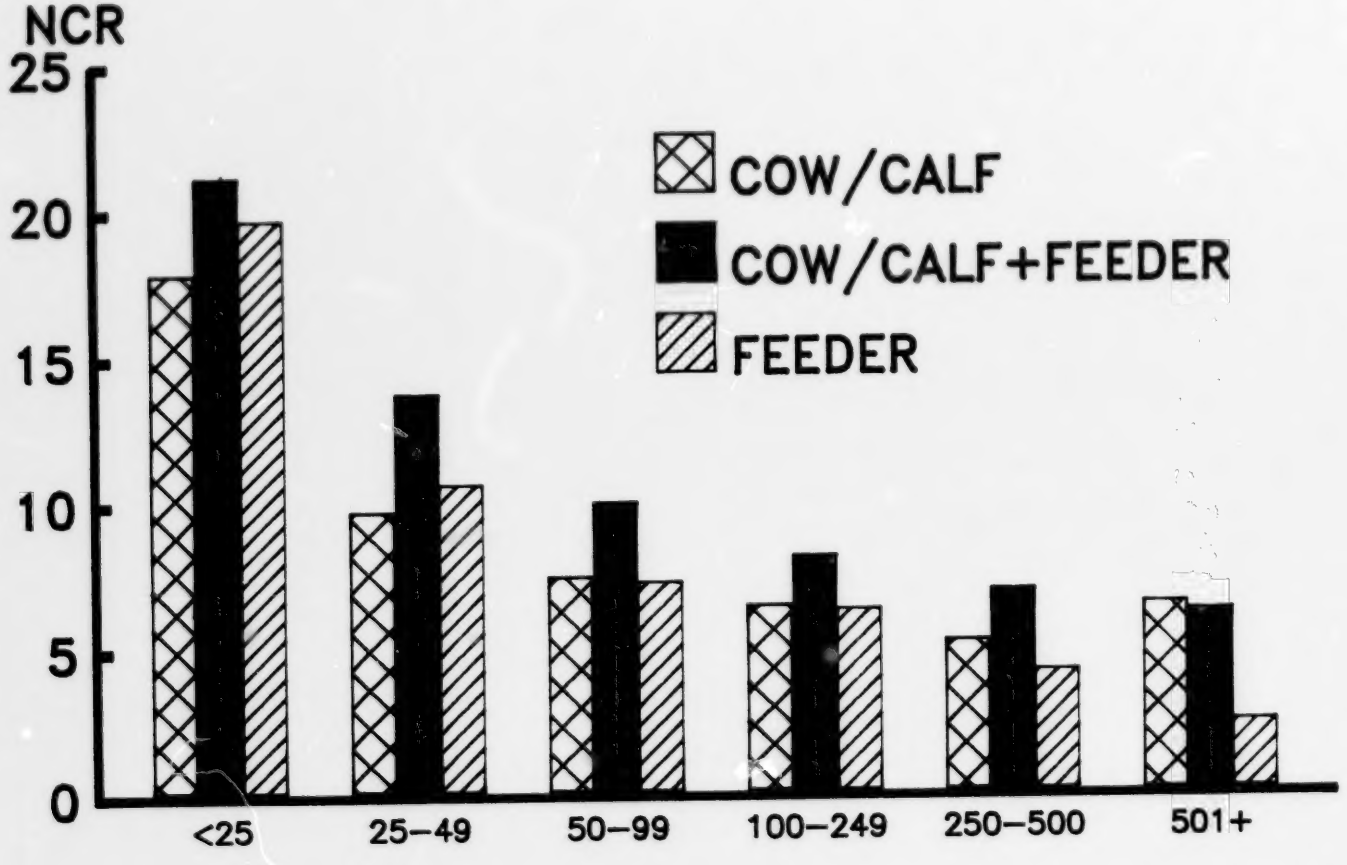


Figure 39 FINANCIAL STRESS BY SALES CLASS



cattle industry is not as highly levered as the hog sector and therefore is not as susceptible to financial stress. This may be because the industry as a whole is not as capital intensive and so has lower debts than the hog sector. This may also be because the cattle sector requires a larger land base so has larger asset values. The cattle sector has an average owned acreage of 502 acres whereas the hog sector has an average of 369 acres.

Off farm work and organization of the firm, other structural attributes, show no significant changes in either of these sectors since 1976.

5.0 Conclusions

In the hog sector, some large changes have occurred. Farm numbers have declined since 1976 and now twice as many hogs are produced on half as many farms. Farms have become much bigger but this is not because of economies of size. Concentration in Quebec has decreased as a result of stabilization policy.

Farms are moving toward more commodity specialization and are becoming more integrated from farrowing to finishing. Farrow to finish or integrated operations now produce the largest proportion of pigs in Canada.

In the cattle sector, it is apparent that most of the changes occurred in the period from 1976 to 1981. Farm numbers and inventories declined but the average cow herd is still the same as in 1981 and is little changed since 1976. The distribution and concentration of production in the beef cow herd has not changed.

The average size of the steer herd, like the cow herd, has not changed since 1981, although the distribution of production now favors large farms and concentration has increased since 1976. There appears to be a bimodal distribution of production, with a group of feeders with small herds - possibly backgrounders - and a group of feeders with large herds - possibly feedlots. The cattle sector as a whole is fairly highly specialized both in terms of commodity produced and enterprise, in that the percentage of integrated (cow/calf plus feeding) operations is declining.

In both the hog and cattle sectors, indicators show solvency ratios decline as farm size increases, but only the very large hog operations appear to be vulnerable and possibly less resilient to changing economic conditions.

In terms of overall structure, it appears that the unit of the family farm remains dominant in the livestock sector as

the percentage of nonfamily corporations has not changed nor has the proportion of off-farm work.

An important change in the cattle sector not apparent from this analysis is that, even as inventories of beef cows have declined, beef production has remained relatively high. Advances in reproductive efficiency and rate of gain through better breeding and management have resulted in gradual improvement in the ability of the sector to produce beef.

Production efficiency has increased in the hog sector, as well, for similar reasons. This has allowed both sectors to produce meat in excess of domestic requirements, which will continue as gains are made in the efficiency of a dynamic industry.

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